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# A KEY TO THE INDO-MALAYAN SPECIES OF *ARHOPALA* BOISDUVAL (LEPIDOPTERA: LYCAENIDAE)

By A. Steven Corbet, D.Sc., Ph.D., F.I.C., F.R.E.S.

(*British Museum, Natural History.*)

Important works dealing with the Indo-Malayan *Arhopala* species are those by Bethune-Baker (1903, *Trans. zool. Soc. Lond.* **17** : 1–164), Fruhstorfer (1914, *Deuts. ent. Z.*, "*Iris*" **27** : 155–166; **28** : 121–137), and Seitz (1926, *Gross-schmett. Erde* **9** : 947–967). Evans (1932, *Ident. Ind. Butt.* : 255–272) published a key for the Indian species, Distant (1882–1886, *Rhop. Malay.*) dealt with the Malayan forms, Moulton (1912, *J. Straits Br. R. asiat. Soc.* **6** : 125–143) with those from Borneo, and Piepers and Snellen (1918, *Rhop. Java*) and Toxopeus (1929, *Tijd. Ent.* **72** : 219–221) with those from Java.

The Indo-Malayan species have been revised on the basis of the male genitalia by me, but present conditions preclude the publication of the results other than in skeleton form. Nor has it been found possible to reproduce the photographic illustrations of over a hundred *Arhopala* forms which were prepared as plates, but copies of these may be purchased on application to the Trustees of the British Museum (Natural History) or to me. I am deeply indebted to Mr. H. M. Pendlebury, Director of F.M.S. Museums, Captain J. N. Eliot, Captain C. F. Cowan, Brigadier A. W. G. Wildey, and Mr. J. E. Kempe for generous facilities for examining material from Malaya.

## Geographical variation.

In general, geographical variation in *Arhopala* is quite marked and remarkable for the fact that it admits of a number of generalisations. As compared with Burma and Java, where seasonal effects are evident, the sexes from Neomalaya (*i.e.* Malaya, Sumatra and Borneo) have the fore-wing more rounded and with blunter apex, the upperside less shining and more purple, and the underside duller, with markings more uniform and less contrasted; usually, any purple gloss on the underside of the Burma and Java races is absent from the corresponding Neomalayan forms. In the male, the fore-wing black border decreases in width on passing from Burma to Malaya, Sumatra and Borneo (Neomalayan *ammonides* is an exception), while the reverse is the case with the female black bordering, the Bornean race having the broadest, and the Burmese race the narrowest borders. Where distinct races occur in the Langkawi Islands, these are intermediate between those from South Burma and Malaya proper, although usually closer to the Burmese form. The Kedah form is often intermediate between Langkawi and Malayan races when these differ. The races from Borneo are more widely differentiated from the South Burmese subspecies than are those from Malaya, as shown by the even duller and more purple upperside, the black bordering narrower in the male and broader in the female, and with the underside markings duller and less clearly defined. Sumatran races are intermediate in these characters between those from Malaya and Borneo.

As a general rule, the Javanese and South Burmese races are rather similar, but the former are paler and more silvery above and with narrower black bordering in the male.

Where the races from Upper Assam are distinct from the corresponding representative from Burma, they are characterised by the deeper purple upperside and the broader black bordering in both sexes. The forms described here from the Mentawi Islands resemble the Mergui races, but the black bordering is broader and the underside, which often has a purple hue, is more uniform, approaching that of the Neomalayan races.

The differences detailed above hold good for all the subspecies described as new in the present paper, except where the reverse is specifically mentioned, so that in many cases no further description is really necessary than to cite the habitat. In any case, it has proved impossible to publish the full descriptions of the new forms under present circumstances. The new names introduced in this paper are based on male holotypes, except of *simonea*, *camdana*, *pendleburyi*, *johoreana*, *empesta*, *regina*, *linta*, *hirava*, *etuna* and *mendava*, of which the holotypes are females. The types of the new insects described in this paper are in the British Museum.

New forms have been named after the following gentlemen who caught the specimens so named: Langkawi Islands, Mr. J. N. V. Miller; Malaya, Fr. R. Cardon, Captains C. F. Cowan and J. N. Eliot, Messrs. H. Gordon Graham, H. N. Ridley, H. M. Pendlebury and Brigadier A. W. G. Wildey; Sumatra, Messrs. C. J. Brooks and A. R. Wallace; Mentawi Islands, Dr. H. H. Karny and Mr. C. Boden Kloss; Java, Herr G. Overdijkink. The unique type of *evansi* was received from the collection of Brigadier W. H. Evans.

## Key for the separation of Groups in the genus *Arhopala* Bsdv. (Genotype *phryxus* Bsdv.).

(Synonyms: *Narathura* Mre. (*hypomuta* (Hew.)), *Nilasera* Mre. (*centaurus* (Fab.)), *Panchala* Mre. (*ganesa* (Mre.)), *Satadra* Mre. (*atrax* (Hew.)), *Acesina* Mre. (*paraganesa* (Nic.)), *Darasana* Mre. (*perimuta* (Mre.)), *Flos* Doh. (*apidanus* (Cram.)), *Iois* Doh. (no spp. cited)).

1(24). UnF with 3 normal cell spots.

2 (9). UnH post-discal spots in spaces 7, 6 and 5 with centres in line, the spots in spaces 7 and 6 more or less in echelon, the inner edge of the spot in space 6 more or less in line with the outer edge of the spot in space 7. Tailed or tailless.

3 (6). UnF with a well-defined dark area under the cell, defined outwardly by an irregular white line: post-discal band broken or angled at vein 4 and upper part curved. Tailed.

4 (5). UnF cell spots abnormal, not confined to cell . . . *anthelus* Group.

5. UnF cell spots normal, and at most a single costal spot *camdeo* Group.

6. UnF no dark area under the cell, but often a more or less obscure dark spot under the central cell spot. Tailed or tailless.

7 (8). Tailed . . . . . *aedias* Group.

8. Tailless . . . . . *epimuta* Group.

9. UnH post-discal spots in spaces 7, 6 and 5 with centres not in line, those in spaces 7 and 6 more or less quadrate and conjoined.

10(23). UnF no spot at the base of space 11 between the basal and central cell spots.

11(18). UnH post-discal band completely dislocated at vein 2.

12(17). Tailed.

13(14). UnF post-discal band completely broken at vein 4, the spot in space 4 moved out; usually with a costal spot in space 10 and often in space 11 and at the bases of spaces 7 and 10 . . . . *democritus* Group.

14. UnF post-discal band not much dislocated at vein 4, the spot in space 4 not out of line and never more than a single costal spot (in space 10 over the cell-end spot).

15(16). F > 21 mm. UnH post-discal spot in space 6 usually with outer edge oblique and well inside the inner edge of the spot in space 5 *silhetensis* Group.

16. F < 21 mm. UnH post-discal spot in space 6 usually with outer edge more or less joining the inner edge of the spot in space 5 *aroa* Group.

17. Tailless. UnF post-discal band confluent and may be bent at vein 4 *perimuta* Group.

18. UnH post-discal band not completely dislocated at vein 2 (except *comica*).

19(22). F termen not concave below the apex.

20(21). Tailed . . . . . *centaurus* Group.

21. Tailless . . . . . *agelastus* Group.

22. F termen sharply concave below the apex . . . . . *rama* Group.

23. UnF with a costal spot at the base of space 11 between the basal and central cell spots; also costal spots over the central and cell-end spots *ganesa* Group.

24. UnF cell spots abnormal.

25(26). Un with prominent markings . . . . . *apidanus* Group.

26. UnF without markings, except obscure post-discal fascia, and (in *caeca*) a cell-end spot . . . . . *fulla* Group.

**Key for the separation of species of the *anthelus* Group.**

(After each species is given the wing expanse of the fore-wing of the Malayan form: where the species is absent from Malaya the measurements given are those of the nominotypical race.)

1 (6). UnF post-discal band partially dislocated at vein 4.

2 (5). UnF without a dark spot above the basal cell spot.

3 (4). UnF without a spot at the base of space 10, but with a white annular spot at the base of space 11. Un with costal portion of both wings darkened . . . . . *ijauensis* B.Bkr. (20 mm.).

(Races are *ijauensis* B.Bkr., Malaya, and **simonea** nom. n. pro *subfasciata* (Mre.), 1883, praeocc., Tavoy.)

4. UnF with a spot at the base of space 10 above the central cell spot, and without a spot in space 11. Un costal areas not darker than the rest of the wing . . . . . *achelous* (Hew.) (21 mm.).

(Races are *achelous* (Hew.), Malaya, also Borneo, and **brooksiana** subsp. n. (♂♀ un almost entirely lacking the purple washing), West Sumatra.)

5. UnF with a prominent spot at the base of space 12 above the basal cell spot, and also a large dark spot over the central cell spot. *anthelus* (Westw.) (27 mm.).

(Races are *anthelus* (Westw.), Moulmein, *anthea* (Evans), Mergui, **grahami** subsp. n. (p. 149), Malaya, also Langkawi Islands and Sumatra, *anunda* (Hew.), Borneo, *majestatis* Fruh., Nias, *jabadia* Fruh., Java, and *sotades* Fruh., Mindanao (♀♀ from Mindoro are not entirely brown above as in *sotades* and represent a new race).)

6. UnF post-discal band completely broken at vein 4, and upper portion of band oblique.

7 (8). Un markings rather pale purple-brown; veins 6 and 7 on H normal *anarte* (Hew.) (29 mm.).

(Races are *anarte* (Hew.), South Burma, and **morphicolor** (Elwes MS.) subsp. n. (♂ un not purple washed), Malaya, also Sumatra and Borneo.)

8. Un markings deep crimson-brown, veins 6 and 7 on H pale purplish-white. Un post-discal markings on F and upper part of H broader than in *anarte* . . . . . *auzea* Nic. (28 mm.).

(Probably represents a highly differentiated race of *A. anarte* from Java.)

**Key for the separation of species of the *camdeo* Group.**

1 (9). UnF post-discal band partially dislocated at vein 4.
2 (5). UnF inner edge of spot in space 4 over the middle of the spot in space 3.
3 (4). F < 25 mm. Un crimson-brown, markings confluent and apices purple-white . . . . . *myrzala* (Hew.) (21·5 mm.).

(Races are **conjuncta** subsp. n. (♂ un with apical area F and whole of H deeper crimson-purple than in nominotypical form), Langkawi Islands, **lammas** subsp. n. (♂♀ un colouring more subdued and white spot in space 7 on H obsolete), Malaya, and *myrzala* (Hew.), Mindanao.)

4. F > 25 mm. Un uniform hair-brown, with an ochreous hue, post-discal markings usually annular, but F spots may be confluent *hellada* Fruh. (28 mm.).

(Races are *ozana* Fruh., North-east Sumatra, also Malaya and Borneo, and *hellada* Fruh., Nias.)

5. UnF inner edge of spot in space 4 touching the outer edge of the spot in space 3. Un ochreous to crimson-brown, but may be white in some vars. of *dispar*.
6 (7). Un hair-brown with an ochreous hue, markings distinctly darker than the ground. UnF post-discal band above vein 4 comprising separated but contiguous spots. UnH post-discal spots in spaces 7 and 6 equal . . . . . *camdeo* (Mre.) (♂ 25, ♀ 21 mm.).

(Races are *camdeo* (Mre.), Darjiling, also Sikkim to Assam, *sebonga* (Tytler), Manipur, *varro* Fruh., Karens, *sphendale* Fruh., South Annam, **camdana** subsp. n. (♀ resembling Javanese race but up mauve with a reddish hue and un with markings only slightly darker than pale ochreous ground), Malaya, and *fruhstorferi* (Röb.), Java : it is probable that *opalina* (Mre.) originated from Siam and not from the Khasi Hills.)

7 (8). Un hair-brown, markings slightly darker than the ground. UnF post-discal band above vein 4 comprising rather large spots not completely separated. UnH post-discal spot in space 6 larger than the spot in space 7. Un dark markings outlined by finer lines than in *camdeo* *azata* Nic. (23 mm.).

(Described from North-east Sumatra, occurs also in Malaya.)

8. Un usually some shade of crimson-brown, and usually a white streak above vein 6 on H : sometimes un mostly white. Un markings large and darker than the ground. UnF post-discal band above vein 4 comprising confluent spots. UnH post-discal spot in space 6 smaller than spot in space 7 . . . . . *dispar* Rly.& Godf. (♀ 25 mm.).

(Races are *diluta* (Evans), Burma, Maymyo, *dispar* Rly. & Godf., North Siam, Prae, and **pendleburyi** subsp. n. (♀ up pale shining blue, H black border

narrower than in Maymyo form; un white, except basal half F and tornal half H, with dark markings arranged as in *diluta*), Malaya.)

9. UnF post-discal band completely broken at vein 4.

10(11). UnF upper portion of post-discal band very oblique (making an angle of about 30° with dorsum), and spots in spaces 4–7 with centres in line; post-discal spots in spaces 1b, 2 and 3 almost parallel to termen. Un markings otherwise similar to *camdeo*, but H whitened in spaces 6 and 7 . . . . . *karennia* (Evans) (20·5 mm.).

(Described from Karens, occurs also in Ataran Valley.)

11. UnF upper portion of post-discal band not so oblique (45° with dorsum), and post-discal spots in spaces 1b, 2 and 3 at about 60° with dorsum. UnH not whitened, post-discal marking annular and separated **johoreana** sp. n. (♀ 18 mm.).

(Known only from 2 ♀♀ from Malaya.)

**Key for the separation of species of the *aedias* Group.**

1 (8). UnF with post-discal spot in space 4 moved out of line with the spots in spaces 3 and 5.

2 (7). UnH post-discal spot in space 4 nearer the termen than the spot in space 5. ♂ upF black border very narrow < 1 mm.

3 (4). UnH post-discal band partially dislocated at vein 2. ♂ upF without an area of modified scales. ♂ up shining purple-blue or purple. ♀ upH black border comparatively broad. Usually of large size, F > 21 mm . . . . . *aedias* (Hew.) (24 mm.).

(Races are *yendava* (Gr. Sm.), Burma, Yendaw (= *pallida* (Evans), Karens), **meritatas** subsp. n. (p. 149), Mergui, also Langkawi Islands, *agnis* C. & R. Feld., Malaya, *soter* Fruh., North-east Sumatra, *tameanga* B.Bkr., South-east Borneo, *sphetys* Fruh., Nias, *aedias* (Hew.), Java (= *pangeran* Fruh., West Java, *hagius* Fruh., type specimen from South Java resembles the usual Neomalayan form), and *oenotria* (Hew.), Mindanao.)

4. UnH post-discal band completely dislocated at vein 2. ♂ upF with a discal area of modified scales.

5 (6). F < 22 mm. ♂ up shining blue or purple-blue, and bluer than in corresponding *aedias* races. ♀ upH black border narrow *atosia* (Hew.) (21·5 mm.).

(Races are *aria* (Evans), Pegu Yoma, **jahara** nom. n. pro *atosia* Evans *nec* Hew., Mergui, also Peninsular Siam and Langkawi Islands, **udapa** subsp. n. (p. 149), Malaya, *atosia* (Hew.), Sumatra, also Borneo, **lurida** subsp. n.[1] (♂♀ up black bordering slightly broader than in Mergui form, and un markings crimson-purple), Mentawi Islands, Siberut (♂) and North Pagi (♀), and *aricia* (Stgr.), Palawan.)

6. F > 22 mm. ♂ up pale sublustrous mauvy blue. ♀ unknown. *malayana* B.Bkr. (" exp. alar. 52 mm.").

(The unique type from Singapore appears to be lost.)

[1] The types of all the Mentawi forms described as new have been figured in a paper by Mr. N. D. Riley on Lycaenidae and Riodinidae of the Mentawi Islands due to appear in the *Bulletin of the Raffles Museum*.

7. UnH post-discal spots in spaces 4 and 5 in line. ♂ up dull violet, with uniform black borders (2 mm.) on both wings. UnF post-discal spots very large . . . . . *semperi* B.Bkr. ("exp. ♂ 54 mm.").

(Described from South-east Borneo; not known to me: ♀ allotype is a different species.)

8. UnF with post-discal spot in space 4 not moved out of line with the spots in spaces 3 and 5.
9. UnH post-discal spots in spaces 4 and 5 in line, forming a short stripe. ♂ up dull purple-blue or purple.
10(11). UnH post-discal spots in spaces 7 and 6 circular and much darker than the ground. Un never purple washed. UnH post-discal band completely dislocated at vein 2 . . . . *pseudomuta* (Stgr.) (21 mm.).

(Described from Malaya, occurs also in Sumatra.)

11. UnH post-discal spots in spaces 7 and 6 rather rectangular and only slightly darker than the ground: the spot in space 6 with its inner edge in line with the outer edge of the spot in space 7, and with its outer edge in line with the inner edge of the spot in space 5. Un purple-washed in Assam and Burma . . *allata* (Stgr.) (♂ 21 mm.).

(Races are *suffusa* Tytler, Manipur, *atarana* (Tytler), Ataran Valley, **pandora** subsp. n. (♂ up deep purple-blue and un not purple washed), Malaya, **evandra** subsp. n. (♂ up with a browner hue than in Malaya and un markings not as clearly defined), Borneo, also West Sumatra, and *allata* (Stgr.), Palawan.)

**Key for the separation of species of the *epimuta* Group.**

1(18). UnH post-discal band completely broken at vein 2. UnF post-discal band usually dislocated at vein 4.
2(17). UnF post-discal spot in space 3 more or less circular as usual and with post-discal spots below vein 3 as usual.
3(10). UnF post-discal spot in space 2 not moved out of line with the spot in space 3.
4 (7). UnF post-discal spot in space 4 moved out of line with spots in spaces 5 and 6.
5 (6). ♂ up uniform deep shining purple, black border a thread. ♀ up deep purple, black bordering very broad, continued rather broadly along F costa and at least 3 mm. wide at vein 3 on H (slightly narrower in Malayan ♀♀). Un post-discal fasciae usually comprising separated spots . . . . . *hypomuta* (Hew.) (17·5 mm.).

(Races are *hypomuta* (Hew.), Malaya, also Langkawi Islands and Sumatra, and *deva* B.Bkr. (= *shelfordi* Moult.), Borneo.)

6. ♂ up shining blue or bluish-purple, with large discal area of specialised scales: F black border a thread. ♀ up blue or purple-blue, with H black border rarely above 2 mm. wide at vein 3 on H
*epimuta* (Mre.) (21 mm.).

(Races are *elsiei* (Evans), South Burma, **epiala** subsp n. (p. 149), Malaya, and *epimuta* (Mre.), Borneo.)

7. UnF post-discal spot in space 4 completely in line with spots in spaces 5 and 6.

8 (9). UnH with minute black submarginal spots in spaces 1b, 1c and 2 crowned with green metallic scales. UnH submarginal lunules not blackened. ♂ upF deep violet-purple, H shining blue, greenish in a side light: F and H with very uniform black borders (1·25 mm.). ♀ up deep blue or purple-blue, with H black border broad (2 mm.), uniform, and hardly increasing towards the apex, and with veins darkened near the border . . . . *metamuta* (Hew.) (16 mm.).

(Described from Sumatra, also Malaya (= *gunongensis* B.Bkr., Malaya, ♀ described as "♂"): 2 ♂♂ (without bodies) from Borneo in B.M. have narrower black bordering.)

9. UnH with prominent black spot at tornal lobe, contiguous with large black submarginal areas in spaces 1b and 1c, which are overlaid with green metallic scales. UnH with submarginal lunules blackened in tornal half of wing . . . . . **avathina** sp. n. (14·5 mm.).

(The nominotypical form from Malaya; other races are **neon** subsp. n. (p. 149), West Sumatra, and **xenon** subsp. n. (p. 149), Borneo, Pulau Laut.)

10. UnF post-discal spot in space 2 moved out of line, its inner edge nearer the outer than the inner edge of the spot in space 3. ♂ upF with uniform black border 1–2 mm. wide.

11(12). ♂ upH paler and clearer blue than F. ♀ up shining blue or purple-blue, black bordering comparatively narrow, that on H increasing towards apex and tornus and that on F usually with at least a trace of a black wedge-shaped mark beyond the cell and anterior to the black border . . . . . *muta* (Hew.) (17 mm.).

(Races are **merguiana** nom. n. pro *metamuta* Evans *nec* Hew., Mergui, also from Peninsular Siam and Langkawi Islands, **maranda** subsp. n. (p. 149), Malaya, *waterstradti* B.Bkr., Borneo also Sumatra, and *muta* (Hew.), Java.)

12. ♂ up F and H the same colour in all lights. ♀ up more purple, and the black bordering broader on both wings.

13(14). F < 14 mm. ♂ up rather dull bluish-purple, with only a faint sheen. ♀ up bluer and H border uniform and almost as broad as F border. Un post-discal spots in spaces 3 and 4 on F and in spaces 6 and 7 on H larger than usual, and the post-discal bands more confluent than usual in the other species of the *muta* complex
**tropaea** sp. n. (♂ 13, ♀ 12 mm.).

(Malaya, Johore.)

14. F > 14 mm.

15(16). ♂ up shining purple-blue, H black border narrower than F border and increasing towards apex and tornus. ♀ upH black border rather irregular and increasing towards apex and tornus.
*moorei* B.Bkr. (♂ 17 mm., ♀ 16 mm.).

(Races are **busa** subsp. n. (p. 149), Malaya, **trima** subsp. n. (p. 149), Sumatra, and *moorei* B.Bkr., Borneo, Kina Balu.)

16. ♂ up shining purple-blue, with a silky sheen, and H black border at least as broad as F border (usually much broader), and of uniform width. ♀ upH black border broad and uniform
**wallacei** sp. n. (17 mm.).

(Sumatra; other races are **santava** subsp. n. (p. 149), Singapore, and **daganda** subsp. n. (♂♀ up black bordering rather narrower than in Sumatran race), Pulau Laut, also mainland of Borneo.)

17. UnF with the post-discal spot in space 3 very elongate and much moved inwards; post-discal band usually not continued below vein 3 (rarely to vein 2 in ♀). ♂ up dull brownish-purple, F black border a thread. ♀ up as in *epimuta*, but F apex more rounded and ground-colour deeper purple . . . . . *kurzi* (Dist.) (♂ 21, ♀ 20 mm.).

(Appears to be known only from Malaya.)

18. UnH post-discal band partially dislocated at vein 2.
19(42). Un hair-brown as usual.
20(37). Un post-discal markings comprising more or less confluent spots as usual.
21(25). F < 17·5 mm.
22. UnF post-discal spot in space 2 not moved out of line with the spot in space 3.
23(24). UnF post-discal fascia narrow, < 1 mm. UnF upper portion of post-discal band oblique, and the spot in space 4 moved out of line with the spots in spaces 3 and 5. F termen strongly convex. ♂ up deep shining violet-blue, with broad and uniform black borders (1·5–2 mm.). ♀ not examined . . . . . *avatha* Nic. (♂ 15 mm.).

(Described from North-east Sumatra, occurs also in Malaya. Up deeper violet-blue than in *zylda* which it closely resembles.)

24. UnF post-discal fascia broader, > 1 mm. UnF post-discal band forming a regular curve, but may be slightly dislocated at vein 4. Termens normal. UnH post-discal spots in spaces 2, 3, 4 and 5 forming a straight and confluent band. ♂ up bluish-purple in Sumatra, shining purple-blue in Malaya, black bordering narrower than in *avatha*. ♀ up pale shining blue, tinged purple, H black border very narrow, < 1·5 mm. (Malaya only).
**zylda** sp. n. (♂ 17 mm. Sumatra; ♂ 15, ♀ 16 mm. Malaya).

(The nominotypical form from West Sumatra; a further race is **elioti** subsp. n. (♂♀ rather smaller than in Sumatran race, and ♂ up shining purple-blue instead of bluish purple), Malaya.)

25. F > 17·5 mm.
26(27). Up bright shining blue or shining purple-blue, F apex very quadrate. ♂ upF black border a thread. ♀ upH black border normally < 1 mm. ♂♀ unF post-discal band slightly sinuous at vein 4, but with spots in spaces 3–5 more or less in line *moolaiana* (Mre.) (19 mm.).

(Races are *moolaiana* (Mre.), Upper Tenasserim (= *pastorella* Doh., Tenasserim Valley, *pagaiensis* Ollenbach, Tavoy), *maya* (Evans), Mergui, also Langkawi Islands and Kedah, **yajuna** subsp. n. (♂♀ un markings less distinct than in *maya*), Malaya, also Sumatra and Borneo, and **klossi** subsp. n. (♂ up as in Mergui form and un as in Neomalayan race), Mentawi Islands, Sipora (♂) and North Pagi (♀). *hesba* (Hew.) replaces *moolaiana* in the Philippines.)

27. Up deep purple or purple-blue, F apex rather blunt. ♀ upH black border > 1·5 mm.
28(36). UnH post-discal spot in space 3 moved in out of line with spots in spaces 2 and 4. F < 21·5 mm.
29(31). UnF post-discal band dislocated at vein 4, the fascia comprising two oblique portions, with outer edge of the spot in space 3 usually continuous with the inner edge of the spot in space 4.

30. ♂ upF broad, uniform black border (1·5–2 mm.). ♀ up purple-blue, rather shining, H black border broad (2 mm. at vein 4), with inner edge clearly defined . . . . . *agesilaus* (Stgr.) (21 mm.).

(Races are **gesa** subsp. n. (♂ F termen straighter and apex more pointed than in Malayan form), Langkawi Islands, also Mergui, *major* (Stgr.), Malaya, also Pulau Tioman and Sumatra, *catori* B.Bkr., Borneo, and *agesilaus* (Stgr.), Palawan.)

31. UnF post-discal band forming a regular curve, or only slightly dislocated at vein 4, usually broader than in *agesilaus*.
32(35). ♂ up purple, F black border 0·5–1 mm. ♀ up as in *agesilaus*.
33(34). ♂ clasper bilobate . . . . *amphimuta* (C. & R. Feld.) (21 mm.).

(Races are **milleriana** subsp. n., Langkawi Islands, also Mergui and Peninsular Siam, and *amphimuta* (C. &. R. Feld.), Malaya, also Sumatra : *anamuta* Semp., Davao, differs from *amphimuta* in the very broad and regular post-discal fasciae on both wings below.)

34. ♂ clasper comprising a single lobe . . . *baluensis* B.Bkr. (20 mm.).

(Described from Borneo, Kina Balu; a further race is **siabra** subsp. n. (♂ up duller and deeper purple, with narrower black borders; ♀ up with very broad black borders, which are inwardly very diffuse), Pulau Laut.)

35. ♂ up deep violet, F black border a thread : H more rounded. ♀ up purple-blue, H black border (1·5–2 mm. at vein 4), with inner edge very diffuse below vein 6 . . . . . *asia* Nic. (♂ 21, ♀ 20 mm.).

(Described from Malaya, occurs also in Sumatra and Borneo.)

36. UnH post-discal spots in spaces 2, 3, 4 and 5 in line forming a smooth curve. F > 21·5 mm . . . . . *dajagaka* B.Bkr. (24 mm.).

(Described from Borneo, occurs also in South-east Sumatra.)

37. Un post-discal markings comprising large, annular, contiguous spots.
38(39). Un markings only slightly darker than the ground. UnH post-discal spot in space 3 elongate and moved inwards
*belphoebe* Doh. (♂ 17·5 mm.).

(Described from Tenasserim Valley; a further race is **cowani** subsp. n. (♂ un paler and with rather darker brown markings and not purple washed), Malaya.)

39. Un markings much darker than the ground. UnH post-discal spot in space 3 more rounded and only slightly moved inwards.
40(41). UnF post-discal markings obsolete or very faint.
*similis* H. H. Drc. (19 mm.).

(Described from Borneo (= *anila* Nic.), also Malaya and Sumatra.)

41. UnF post-discal markings large, comprising elongate spots
*agesias* (Hew.) (20 mm.).

(Races are *ovomaculata* (Hew.), Sumatra, also Malaya, *agesias* (Hew.), Borneo, and **nabala** subsp. n. (♂♀ up as in Sumatran form, but ♀ has broader black bordering), Kina Balu.)

42. Un crimson-purple, with markings indicated by narrow, white lines, and a prominent white spot mid-costa on H.
**myrzalina** sp. n. (♂ 15 mm.).

(Malaya; only 2 ♂♂ known.)

**Key for the separation of species of the *democritus* Group.**

1 (2). UnF post-discal band completely broken at vein 4, upper portion very oblique. H with rather a long tail at vein 2, a shorter tail at vein 3, and a short prolongation at vein 1b . . . . *anella* Nic. (♀ 21 mm.).

(Described from Malaya, also occurs in North-east Sumatra : only ♀♀ known to me.)

2. UnF post-discal band not completely broken at vein 4. H with a single tail at vein 2 as usual.

3 (4). UnH post-discal spot in space 6 outwardly strongly concave, this spot large and overlapping the spot in space 5 and the cell-end spot. Un markings broken up and comprising lines and dashes *democritus* (Fab.) (19·5 mm.).

(Races are *democritus* (Fab.), Peninsular Siam, also South Burma and Langkawi Islands (= *albopunctata* (Hew.), Moulmein), *lycaenaria* (C. & R. Feld.), Malaya, *buxtoni* (Hew.), Sumatra, and *olinda* (H. Drc.), Borneo.)

4. UnH post-discal spot in space 6 outwardly convex.

5 (7). UnF with a spot at the base of space 10 over the central cell spot.

6. Un purple-brown, markings broad and darker than the ground, and post-discal spots annular . . . . . *alitaeus* (Hew.) (17 mm.).

(Races are *mirabella* Doh., Tenasserim, **valika** subsp. n. (♂ differs from Tenasserim form in the paler ground below with deeper and slightly broader crimson-brown markings), Langkawi Islands, **pardenas** subsp n. (♂ up deeper violet-blue and with rather blacker bordering than in *mirabella*, and un without a crimson hue), Singapore, also West Sumatra, **mira** (Evans Mss.) subsp. n. (♂ up duller and F more rounded than in Malayan form; ♀ up deep purple with very broad black borders), Borneo, **psama** subsp. n. (♂ up as in Bornean form, but un nearest to *valika*), Mentawi Islands, *zilensis* Fruh., Bazilan, *alitaeus* (Hew.), Macassar, and *viviana* (Röb.), Bangkai.)

7. UnF without a spot at the base of space 10 over the central cell spot.

8(11). Un markings distinctly darker than the ground. Un purple washed, except in Bornean *ariana*.

9(10). Un all markings deep purple-brown, darker than the ground, and post-discal fasciae rather confluent. UnH with a black spot at the tornal lobe and a smaller black spot in space 2 . . *atrax* (Hew.) (18 mm.).

(Races are *aida* Nic., Burma, also Langkawi Islands, and *atrax* (Hew.), Malaya; *havilandi* B.Bkr., Kina Balu, may be a race, while *myrtale* (Stgr.) appears to represent the species in Palawan.)

10. Un markings hardly darker than the ground in tornal half of H, and post-discal fasciae more irregular. Un not as strongly purple glazed as in *atrax*. UnH with black spots at the tornal lobe and in spaces 1c and 2 . . . . . *ariana* (Evans) (20 mm.).

(Races are *ariana* (Evans), Tavoy, **ariavana** subsp. n. (p. 149), Langkawi Islands, and **arianaga** subsp. n. (♂♀ F more elongate than in nominotypical form), Malaya : *myrtha* (Stgr.) is possibly a highly differentiated race from Palawan.)

11. Un markings not darker than the ground, and very rarely purple washed. Un markings yellowish-white and mostly comprising annular spots. Un black tornal spots as in *ariana* . *rafflesii* Nic. (19 mm.).

(Races are *dama* Swinh., Burma, *rafflesii* Nic., Malaya, and *elopura* H. H. Drc., Borneo : *mindanensis* B.Bkr., Philippines, not known to me but figure of type suggests a *rafflesii* race.)

**Key for the separation of species of the *silhetensis* Group.**

1 (4). UnH outer edges of post-discal spots in spaces 2–5 not in line, the spot in space 3 being moved inwards. UnF post-discal band dislocated at vein 4 and the spot in space 3 moved in (sometimes only slightly in *silhetensis* from East Java).

2 (3). F 23–24 mm. ♂ F quadrate, apex pointed, colour purple-blue with a violet tinge . . . . . *silhetensis* (Hew.) (23·5 mm.).

(Races are *silhetensis* (Hew.), Assam, *arama* Nic. (= *nicévillei* B.Bkr.), Burma, *adorea* Nic., Malaya, also Peninsular Siam and Sumatra, *drucei* B.Bkr., Borneo, *georgias* (Seitz), West Java, *fundania* Fruh., East Java, and *malayica* B.Bkr., Philippines.)

3. F 21–22 mm. ♂ F rather narrower, apex blunter, colour purple-blue, but more shining ultramarine. In Malaysian specimens, the ground-colour on unH more ochreous and, perhaps, markings more broadly outlined with yellowish buff than in the corresponding *silhetensis* races . . . . . *zambra* Swinh. (21·5 mm.).

(Races are *zambra* Swinh. (= *antura* Swinh.), Burma, also Malaya, Sumatra and Borneo, and *vandenberghi* (Tox.), West Java.)

4. UnH post-discal spots in spaces 2–5 more or less in line, their outer edges forming a straight line. UnF post-discal band not dislocated at vein 4 and more or less uniform in width throughout.

5 (6). From Burma to Malaysia and Lombok . . . *apha* Nic. (♂ 23 mm.).

(Races are *apha* Nic., Tenasserim (= *regia* Evans, Mergui), **aphadantas** subsp. n. (♂ up black borders broader than in Mergui form in type, but not in a second specimen; un as in Bornean form and not purple washed), Malaya, *incerta* Moult., Borneo, and **apharida** (Fruhstorfer Mss.) subsp. n. (♂ resembles specimen figured in Piepers and Snellen, *Rhop. Java*, pl. xxiii, fig. 100a), Lombok, also West Java.)

6. From Amboina . . . . . *adatha* (Hew.) (23 mm.).

(Best regarded as a distinct species on account of its intermediate position between *silhetensis* and *apha*.)

**Key for the separation of species of the *aroa* Group.**

1 (2). Un rather dark brown, markings confluent and very wide, hardly darker than the ground, and with inner and outer edges defined by very narrow and rather straight white lines . . . . *ace* Nic. (20 mm.).

(Races are *arata* Tytler, Assam, and *ace* Nic., Malaya, also Sumatra.)

2. Un markings not remarkably broad.

3 (6). Un ochreous hair-brown : markings dull, obscure and narrow.

4 (5). UnH post-discal spot in space 6 midway between cell-end spot in space 5, or nearer the former. H smooth. UnH green tornal scales prominent and sharply defined. ♂ up very deep purple-blue *agrata* Nic. (21 mm.).

(Races are *agrata* Nic., Malaya, also Sumatra, and *brookei* B.Bkr., Pulau Laut, also Borneo mainland; the form from Assam and Burma represents a distinct race.)

5. UnH post-discal spot in space 6 much nearer the post-discal spot in space 5. Un markings very obscure. H slightly crenulate *oenea* (Hew.) (♂ 20, ♀ 19 mm.).

(Described from Darjiling; occurs also in Bhutan, Sikkim and Assam, and *khamti* Doh., Assam falls as a synonym.)

6. Un brown to buff, purple glossed in some species, and markings prominent.

7(17). Un rather dark ochreous brown, without a marked pink or purple gloss. Un with green tornal scales.

8 (9). Un markings broad; on both wings the cell-end spots almost touching the post-discal bands. UnF post-discal spot in space 3 moved in, but with its inner edge in line with the inner edges of the spots in spaces 2 and 1b. ♂ up deep shining purple-blue, black bordering very narrow. ♀ unknown . . . . . **agamemnon** sp. n. (♂ 20 mm.).

(The unique ♂ holotype from Singapore.)

9. Un markings usual width.

10(11). UnF with post-discal spot in space 3 moved in, and both inner and outer edges out of line with adjacent spots (the outer edge in line with the spots in spaces 2 and 4 in races from Langkawi and Mentawi Islands). Un post-discal spot in space 6 oblique. ♂ upH space 6 not blackened, except for narrow distal border. ♂ up shining purple-blue (purer blue in fresh specimens), F black border narrow, and apex rather pointed . . . . . *kounga* B.Bkr. (♂ 17, ♀ 16 mm.).

(Races are **ralanda** subsp. n. (= *aroa* Evans *nec* Hew.) (♂ up shining purple-blue, with narrow and uniform black border; ♀ up more purple-blue, with usual black borders, Tavoy, found from Toungu to Mergui), **milleri** subsp. n. (♂ has the pointed F and blue colour characteristic of *kounga*, but up more purple than in Malayan race; F 18 mm.), Langkawi Islands, **ridleyi** subsp. n. (♂ up colour as in *ralanda*, but black bordering broader; ♀ up duller and more purple and with broader borders than in Burmese ♀♀), Malaya, also Sumatra, *kounga* B.Bkr., Borneo, Kina Balu, and **karnyi** subsp. n. (♂ up with a faint but perceptible indigo hue; un resembling Langkawi form; F 18 mm.), Mentawi Islands.)

11. UnF with post-discal spot in space 3 in line with adjacent spots.

12(14). UnH post-discal spot in space 6 oblique. ♂ upH space 6 not blackened, except for narrow distal border. ♀ up black bordering decreasing markedly towards tornus on both wings.

13. ♂ up deep purple to purple-blue. F black border slightly broader than in *kounga*. ♂ F termen more rounded and apex blunter than in allied species . . . . . *aroa* (Hew.) (19 mm.).

(Races are **esava** subsp. n. (♂ up shining purple-blue, with narrow uniform black borders; ♀ up black bordering much narrower than in the Sumatran form), Mergui, also Kedah, **arops** subsp. n. (intermediate between Mergui and Sumatran forms in both sexes), Malaya, *aroa* (Hew.), Sumatra, and *sublustris* B.Bkr., Kina Balu : ♂ from East Java, Ongop, 5000 ft., has up bluer and with more pronounced black bordering than in Sumatran *aroa*.)

14. UnH post-discal spot in space 6 quadrate and conjoined with the spot in space 7. ♂ upH upper half of space 6 mostly blackened. ♂ termen rather straight and apex pointed. ♀ up black borders rather uniform on both wings.

15(16). Un markings distinctly darker than the ground; post-discal spots in spaces 5, 4, 3 and 2 on H not in line. ♂ up shining purple-blue to purple . . . . . *phaenops* C. & R. Feld. (17 mm.).

(Races are **phanda** subsp. n. (♂♀ up bluer than in Bornean race), Malaya, also South Burma, *sandakani* B.Bkr., Borneo, and *phaenops* C. & R. Feld., Luzon: Sumatran examples intermediate between Malayan and Bornean forms.)

16. Un markings only slightly darker than the ground, and sharply defined by narrow, pale yellowish lines; post-discal bands confluent, and post-discal spots in spaces 5, 4, 3 and 2 on H in line. Un with a glazed appearance. ♂ up blue to purple, with a greyish hue.
*azinis* Nic. (♂ 20 mm.).

(Races are **evansi** subsp. n. (♂ up shining greyish-blue, strong purple in some lights, with black bordering narrower than in type of *azinis*), Malaya, Sembilan Islands, Pulau Rumbia, and *azinis* Nic., North-east Sumatra: B.M. has single ♀♀ from Kina Balu and West Java.)

17. Un pale ochreous brown to ochreous buff, with a prominent rosy pink to purple gloss. UnH green tornal scales usually sparse and diffuse, but prominent in *alea*.

18(21). UnH with post-discal spot in space 6 more or less overlapping the cell-end spot. Un ochreous brown, strongly purple glazed.

19(20). Un with apical areas of F and H conspicuously whitened. UnF post-discal band rather irregular and narrowing towards the tornus. ♂ upF black border narrow and almost uniform . *agaba* (Hew.) (20 mm.).

(The type from "India" probably of Burmese origin, also found in Siam.)

20. Un with apical areas usually not whitened. UnF post-discal band more uniform, not narrowing towards the tornus. ♂ upF black border at least 1 mm. wide and increasing towards the costa
*alea* (Hew.) (19 mm.).

(Races are *aurelia* (Evans), Assam, *alea* (Hew.), Burma (= *selta* (Hew.). Moulmein), also Peninsular Siam, and *constanceae* Nic., Andaman Islands.)

21. UnH with post-discal spot in space 6 with inner edge clear of the outer edge of the cell-end spot. Un ochreous buff with a rosy pink gloss.

22(23). Un ochreous buff, heavily purple glossed. UnF no costal spot in space 10 . . . . . *canaraica* (Mre.) (20 mm.).

(Confined to South India.)

23. Un ochreous buff, with a pale rosy pink gloss. UnF with a costal spot in space 10.

24(25). UpH brown. UpF discoidal spot not surrounded by a whitish area
*alemon* Nic. (♂ 19, ♀ 18 mm.).

(Described from Burma; *hewitsoni* B.Bkr., Burma, is a synonym; occurs in South India and from Nepal and Sikkim to Burma and Siam.)

25. UpH with cell and a small area beyond cell purple. UpF with the broad brownish-black discoidal spot surrounded by a whitish area. *alax* (Evans) (18 mm.).

(Described from Assam; occurs also in Burma and Siam.)

**Key for the separation of species of the *perimuta* Group.**

1 (4). Un pale hair-brown, with a slight ochreous hue; markings obscure.
2 (3). UnF post-discal band confluent, more or less parallel with termen, and hardly darker than the ground. F > 17 mm. *inornata* (C. & R. Feld.) (21 mm.).

(Races are *inornata* (C. & R. Feld.) (= *brahma* B.Bkr.), Malaya, also Peninsular Siam and Sumatra, and **empesta** subsp. n. (♀ up reddish-purple with broader black borders; ♂ up deeper purple than in Malayan form), Borneo.)

3. UnF post-discal band more macular, partially dislocated at vein 4 and upper portion oblique; markings slightly but definitely darker than the ground. F < 17 mm. *antimuta* (C. & R. Feld.) (15 mm.).

(Races are **tana** subsp. n. (♂♀ up more shining blue than in the Malayan form and un with a slight reddish hue), Burma, Ataran Valley, *antimuta* C. & R. Feld. (= *davisonii* Nic.), Malaya, and **timana** subsp. n. (♂ up more violet and ♀ up duller and more purple than in the Malayan form), Borneo.)

4. Un with central yellow band on H, and basal area of H and termens of F and H shaded deep purple. UnF post-discal band confluent, with upper portion bent towards the base *perimuta* (Mre.) (♀ 15 mm.).

(Races are *perimuta* (Mre.), Assam, **regina** nom. n. pro *regia* Evans praeocc., Mergui, and **linta** subsp. n. (♀ up black borders slightly narrower than in Burmese form), Malaya.)

**Key for the separation of species of the *centaurus* Group.**

1(12). UnF post-discal band forming a smooth curve (slightly sinuous in *cooperi* and may be slightly bent at vein 4 in Burmese *barami*).
2 (9). UnH outer edge of post-discal spot in space 6 convex.
3 (8). Un colour and markings aberrant.
4 (5). Un pale buff to greyish-brown, F markings dark brown and H markings may be present only in outline . . *alesia* C. & R. Feld. (19·5 mm.).

(Races are *sacharja* Fruh., South Annam, *wimberleyi* (Nic.), South Andaman Islands, *alesia* C. & R. Feld., Luzon, and *ocrida* (Hew.), Mindanao.)

5. Un pale purple, strongly glazed, markings rich purple-brown and confluent. ♂ up with comparatively broad and uniform borders.
6 (7). ♂ up deep lustrous violet-blue. ♀ up paler and bluer *paralea* (Evans) (♂ 19, ♀ 18 mm.).

(Described from Burma, Maymyo; occurs from Assam to the Dawnas.)

7. ♂ up pale azure blue. ♀ unknown . *buddha* B.Bkr. (" exp. 40 mm.").

(Described from West Java and known to me only from Bethune-Baker's figure: *aleta* Piep. appears to be the race from East Java.)

8. Un pale hair-brown, with usual markings
*barami* B.Bkr. (♂ 23·5, ♀ 22 mm.).

(Races are *woodii* Ollenbach, South Burma, **penanga** subsp. n. (p. 149), Malaya, and *barami* B.Bkr., Borneo.)

9. UnH outer edge of post-discal spot in space 6 concave.
10(11). F > 22 mm. UnF markings in cell defined by silvery green lines
*centaurus* (Fab.) (27 mm.).

(Races are *pirama* (Mre.), Ceylon, also South India, *pirithous* (Mre.), North-east Himalayas, Sikkim and Assam, *coruscans* W. M. & Nic., Andaman Islands, *nakula* (C. & R. Feld.), Malaya, also Burma and Peninsular Siam, *cervidius* Fruh., South-east Borneo, also Sumatra, *centenitus* Fruh., Batu Islands, Pulau Tello, *pseudocentaurus* (Dbl.), Java, *amazona* (Pagen.) (= *aphobus* Fruh.), East Java, *centaurus* (Fab.) (= *eupolis* (Miskin), Queensland, *asopus* Wat. & Lyell, Darwin), and others in the Papuan regions.)

11. F < 22 mm. UnF without silvery-green markings
*cooperi* (Evans) (18 mm.).

(Races are *cooperi* (Evans), Mergui, **gana** subsp. n. (♂♀ un markings darker, rather broader and more confluent than in nominotypical race), Kedah, also Malaya and Sumatra, and **siberuta** subsp. n. (♂ up slightly deeper blue than in Mergui form, and un rather more purple-brown, with darker and more confluent markings), Mentawi Islands, Siberut.)

12(18). UnF post-discal band sharply bent, but not dislocated at vein 4, and the spots in spaces 2 and 3 larger than the post-discal spots above vein 4.
13. UnH outer edge of post-discal spot in space 6 convex.
14(15). F > 21 mm. Un hair-brown, with prominent dark brown markings. ♂ up deep purple. ♀ up purple-blue, with F and H black borders narrowing towards tornus . . . . . *corinda* (Hew.) (22 mm.).

(Races are **corestes** subsp. n. (♂ up paler and more purple than in Malayan form), Langkawi Islands, also Mergui, *acestes* Nic., Malaya, and *corinda* (Hew.), Philippines.)

15. F < 21 mm. Un brown or purple-brown, markings not very prominent. ♂ up shining green. ♀ up purple-blue, with F and H black borders uniform.
16(17). Un hair-brown. ♂ upH black border very broad, at least 2 mm. at vein 6 : wing bases not blue . . . *aurea* (Hew.) (♂ 20, ♀ 19 mm.).

(Described from Borneo; *borneensis* B.Bkr. and *tembaga* Moult. from the same island are synonyms; occurs also in Malaya and Sumatra.)

17. Un purple-brown. ♂ upH black border a thread at vein 6 : wing bases blue . . . . . *trogon* (Dist.) (♂ 20, ♀ 19 mm.).

(Described from Malaya; *rajah* Moult., Borneo, is a synonym. At present it is difficult to decide if *aurea* and *trogon*, with the same ♂ genitalia, are distinct : of 23 ♂♂ examined, 13 have up and un as in *aurea*, 9 have up and un as in *trogon*, and 1 from Johore (Capt. J. N. Eliot has other similar specimens from the same locality) has up as *aurea* and un as *trogon*.)

18. UnF post-discal band dislocated at vein 4, and upper portion usually more oblique.
19(28). Un hair-brown with usual markings.
20(21). UnH post-discal spot in space 6 separate and rounded. ♂ up purple-blue . . . . . *vihara* (C. & R. Feld.) (22 mm.).

(Races are **hirava** subsp. n. (♀ up bluer and more shining than in Malayan form), Langkawi Islands, probably also South Burma and Kedah, *vihara* (C. & R. Feld.), Malaya, also Sumatra and Borneo, and **pagia** subsp. n. (♂ up black bordering broader than in *hirava*, and un deeper purple-brown than in *vihara*), North Pagi Island.)

21. UnH post-discal spot in space 6 quadrate and conjoined with the spot in space 7.
22(25). UnH outer edge of post-discal spot in space 6 concave. ♂ up shining green. ♀ upF no black cell-end spot.
23(24). UnH outer edge of post-discal spot in space 6 V-shaped. UnF with post-discal spot in space 4 moved out of line with the spots in spaces 5 and 6. ♂ upF black border narrow $< 2$ mm. ♀ upF with a conspicuous black patch beyond the cell . *eumolphus* (Cram.) (21·5 mm.).

(Races are *eumolphus* (Cram.), Coast of Bengal (= *bupola* (Hew.), Darjiling, *elis* Fruh., Sikkim, *tagore* Fruh., Assam), Sikkim to Assam, Bassein and Karen Hills, *hellenore* Doh., Mergui (= *viridissima* Swinh., Mandalay), also occurs from Assam to Karens and Tavoy, *maxwelli* (Dist.) (= *farquhari* (Dist.), Malaya), also north to Mergui, *caesarion* Fruh. (= *siroes* Fruh.), North-east Sumatra, *caesetius* Fruh., Borneo, *adonia* (Hew.) (= *grynea* (Hew.), *sanherib* Fruh., *aytonia* Fruh.), Java, and *aristomachus* Fruh., Palawan, the last-named known to me only from the figure.)

24. UnH outer edge of post-discal spot in space 6 usually concave, and not V-shaped. UnF with post-discal spot in space 4 usually more or less in line with the spots in spaces 5 and 6. Up black border broader in both sexes. ♂ upF black border broad $> 4$ mm. ♀ upF costal border broader and no black patch beyond cell visible; F costal border and upper half of distal border on H broader than in *eumolphus horsfieldi* (Pagen.) (♂ 22, ♀ 23 mm.).

(Races are *eurysthenes* Fruh., South Burma, also Peninsular Siam and Langkawi Islands, *basiviridis* Nic., Malaya, also North-east Sumatra, *herodianus* Fruh., West Sumatra, *leokrates* Fruh., Borneo, *biru* Fruh., Nias, and *horsfieldi* (Pagen.), East Java (= *vellanus* Fruh., West Java).)

25. UnH outer edge of post-discal spot in space 6 straight.
26(27). ♂ up lustrous purple, with outer half of F from mid-costa to tornus broadly black: H with costal and apical half of distal margin broadly blackened. ♀ up shining blue, with F discocellulars prominently blackened . . . . . **overdijkinki** sp. n. (19·5 mm.).
(West Java; a long series in the B.M.)
27. ♂ up lustrous brown, deep violet in some lights, termens broadly lustrous purple. ♀ up lustrous azure blue, black bordering as in *A. atosia* ♀, but apex of cell on F is blackened, un brown, slightly tinged violet, with dark markings edged with very pale lilac *bella* B.Bkr. (♀ 21 mm.).

(Described from Borneo, Kina Balu and known to me only from the figures. A ♀ from Malaya has the black border broader and the un faintly lilac tinged.)

28. Un some shade of purple-brown.
29(32). UnH outer edge of post-discal spot in space 6 convex.
30(31). Un with basal half of F and whole H white dusted
*ormistoni* Rly. (20·5 mm.).

(Confined to Ceylon.)

31. UnF white dusted only at base . . . . . *bazaloides* (Hew.) (20 mm.).

(Type probably from Assam; occurs also in South India.)

32. UnH outer edge of post-discal spot in space 6 concave.
33(36). UnF with dark area under cell not produced to join the post-discal band.
34(35). UnH central cell spot not joined to central costal spot. ♂ up deep violet-purple, F black border < 1 mm., no cell-end spot
*bazalus* (Hew.) (♂ 22, ♀ 23 mm.).

(Races are *bazalus* (Hew.), Assam (= *teesta* Nic., Sikkim), Sikkim to South Burma, **zalinda** subsp. n. (♂ up paler and more shining violet-purple than in the Assam form; ♀ upH deep lustrous purple-blue as F, with a black border, and not almost entirely blackish-brown as in other described races), Malaya, Kedah Peak, also Malay Peninsula, *nebenius* Fruh., North-east Sumatra, *pratinas* Fruh., Java, and *turbata* (Btlr.), Japan, also Corea, China and Formosa.)

35. UnH central cell spot conjoined with central costal spot. ♂ up dull brownish-purple, F black border 2 mm., and with black cell-end spot
*singla* (Nic.) (21 mm.).

(Described from Sikkim, occurs also in Assam and south to the Karens.)

36. UnF dark area under cell produced as a long streak in upper part of space 1b to join the post-discal band . . *amantes* (Hew.) (26 mm.).

(Races are *amantes* (Hew.), Ceylon, *apella* (Swinh.), Central India, also Sikkim, and *amatrix* Nic., Upper Burma, occurs from Assam to Tavoy.)

**Key for the separation of species of the *agelastus* Group.**

1 (3). UnF post-discal band oblique, decreasing from costa and directed towards tornus. UnH post-discal spots in spaces 6 and 7 very large and dark.
2. UnH outer edge of post-discal spot in space 6 concave
*alaconia* (Hew.) (19 mm.).

(Races are **aloana** subsp. n. (♂ up as in the Palawan race but the inner edge of H black border more indented; un markings more clearly defined), Tavoy, also Malaya, *alaconia* (Hew.), Borneo, and *oberthüri* (Stgr.), Palawan.)

3. UnF post-discal band more or less parallel with termen, not decreasing from costa and directed towards dorsum. UnH post-discal spots normal.
4(19). UnF post-discal band evenly curved and not bent at vein 4. UnH outer edge of post-discal spot in space 6 convex (may be slightly angled or sinuous in middle in *asopia* and *agelastus*).
5(16). Un ochreous brown.
6 (7). Un markings comprise very regular rounded spots, particularly the post-discal fasciae
**cardoni** nom. n. pro *belphoebe* Evans *nec* Doh. (♂ 16 mm.).

(The unique ♂ holotype from Malaya.)

7. Un post-discal fasciae comprise confluent bands, particularly on F.
8 (9). F < 16 mm. ♂♀ deep shining blue; upH black border broad and uniform. UnH green tornal scales present **wildeyana** sp. n. (15 mm.).

(Races are *wildeyana*, Malaya, also Borneo, and **havea** subsp. n. (♂ up rather narrower black bordering and un darker), Langkawi Islands.)

9. F > 16 mm.
10(13). UnH without green tornal scales. ♂ bluish-purple, ♀ blue.
11(12). UpH with uniform black border. ♂ aedeagus < 2 × clasper. Andamans only . . . . . *zeta* (Mre.) (18 mm.).

(Confined to the Andaman Islands; *roona* (Mre.) a synonym.)

12. UpH black border narrower, increasing towards apex and tornus. ♂ aedeagus 2 × clasper . . . . . *asopia* (Hew.) (20 mm.).

(Described from Moulmein, *tounguva* (Gr. Sm.), Toungoo, a synonym: occurs from Assam to Peninsular Siam, Andaman Islands, Siam and South Annam. *A. japonica* (Murray), Japan, also Corea and China, is a closely allied species with entirely different genitalia.)

13. UnH with green tornal scales.
14(15). UpF black border increasing markedly towards the apex in both sexes, and H black border < 2 mm., ♂ purple, ♀ blue *agelastus* (Hew.) (♂ 19, ♀ 20·5 mm.).

(Races are *perissa* Doh., South Burma, and *agelastus* (Hew.), Malaya.)

15. ♂ deep violet-purple, F black border narrow (1 mm.) increasing slightly towards the apex. ♀ deep blue, with broad black borders on both wings, H border > 2 mm . . . . . *labuana* B.Bkr. (21·5 mm.).

(Races are *labuana* B.Bkr., Borneo, also Malaya and Sumatra, and **etuna** subsp. n. (♀ up black borders broader and un markings more contrasted), North Pagi Island.)

16. Un pinkish-grey.
17(18). UnH post-discal spot in space 6 larger than that in space 7. UnF post-discal band of uniform width throughout . *aeeta* Nic. (17 mm.).

(Described from Burma, Thaungyin Valley, and confined to South Burma.)

18. UnH post-discal spot in space 7 larger than that in space 6. UnF post-discal band markedly increasing in width below vein 5. Sexes alike . . . . . *epimete* (Stgr.) (♂ 15 mm.).

(Races are *duessa* Doh., South Burma, also Langkawi Islands, **suedas** subsp. n. (♂ upH blue dusting in cell more extensive and un more uniform than in Burmese race), Malaya, and *epimete* (Stgr.), Palawan.)

19. UnF post-discal band bent at vein 4, the spot in space 4 moved out of line with the spots in spaces 3 and 5. UnH outer edge of post-discal spot in space 6 concave. Un purple glazed in Burma and Java, hair-brown in Malaya and Borneo . *arvina* (Hew.) (♂ 20, ♀ 18·5 mm.).

(Races are *ardea* (Evans), Upper Assam, *aboë* Nic. (= *adala* Nic., *adulans* Nic.) South Burma, **adalitas** subsp. n. (♂♀ up black bordering as in Burmese race but un not purple glazed), Kedah, also Malaya, and *arvina* (Hew.), Java: a Bornean ♀ probably represents a new race.)

**Key for the separation of species of the *rama* Group.**

1 (6). Tailed.
2 (5). Un post-discal bands regular, F post-discal band continuous. UnH post-discal band not dislocated at vein 2.
3 (4). Un pale purple-brown with a purple glaze : H with outer edge of post-discal spot in space 6 concave. Up purple in both sexes; ♀ with much broader black bordering . . . . . *rama* (Koll.) (18 mm.).

(Races are *rama* (Koll.) (= *querceti* (Mre.), *violacea* (Röb.)), North India, and *ramosa* (Evans), Burma : B.M. has the species also from China and Formosa.)

4. Un pale silky buff-brown; H markings faint : H with outer edge of post-discal spot in space 6 more or less straight or slightly sinuous. Up pale blue with broad black bordering : sexes alike *dodonaea* (Mre.) (19 mm.).

(Confined to North India.)

5. Un post-discal bands irregular. UnH post-discal band completely dislocated at vein 2. H produced at tornus . *comica* Nic. (17 mm.).

(Described from Upper Burma, also found in Assam.)

6. Tailless. Un pale hair-brown, with an ochreous hue, markings not prominent. UnF post-discal band regular and H post-discal band partially dislocated at vein 2 . . . . . *paramuta* (Nic.) (15 mm.).

(Described from Sikkim, *newara* (Mre.), Nepal, a synonym : occurs from Sikkim to the Karens and Siam.)

**Key for the separation of species of the *ganesa* Group.**

1 (2). H tailless. UnH almost entirely white, with obscure markings *ganesa* (Mre.) (15 mm.).

(Races are *ganesa* (Mre.), North-west India, and *watsoni* Evans, Assam : it is probable that *loomisi* (H. Pryer), Japan, and *seminigra* Leech, China, Chang Yang, are also subspecies.)

2. H tailed. UnH with at most the apical area whitened and a white patch at mid costa.
3(14). H with the usual tail at vein 2. UnF post-discal band always continued to vein 2 at least.
4 (5). UnF post-discal band completely dislocated at vein 4, the outer edge of the spot in space 3 in line with the inner edge of the spot in space 4 *aberrans* (Nic.) (16·5 mm.).

(Races are *ellisi* (Evans), Burma, Maymyo, and *aberrans* (Nic.), Upper Tenasserim, also North Burma to Assam.)

5. UnF post-discal band not broken at vein 4.
6 (7). UnF post-discal band partially dislocated at vein 4, upper portion more oblique and lower portion directed towards the tornus. Un pale ochreous brown, with a faint purple hue, with white areas on the inner edges of the post-discal bands in lower half of F and upper half of H . . . . . *paraganesa* (Nic.) (♀ 14 mm.).

(Races are *paraganesa* (Nic.), North India, *zephyretta* (Doh.), Upper Assam, *birmana* (Mre.) (= *arisba* (Nic.), *dascia* Swinh., *maymyoica* (Tytler)), Burma, **mendava** subsp. n. (♀ up pale shining blue, without blackening of the F disco-

cellulars as in Burmese form, and un with F post-discal band more regular), Malaya, *corthatha* Fruh., Hong Kong, and *oryuzana* (Wileman), Formosa.)

7. UnF post-discal spot in space 4 moved out of line with the spots in spaces 3 and 5. Un crimson-brown, in some species with a small white spot mid costa on H, and all markings outlined by fine white lines.

8(11). UnH with the post-discal and central spots in space 7 separated by a white spot. Un apex of F and H whitened (only slightly so in Malaya).

9(10). ♂ up purple-blue, F black border narrow (< 1 mm.). ♀ up more purple than in Malaysian *ammonides* and with black border rather narrower and more uniform . . . . . *ammon* (Hew.) (14 mm.).

(Only known from Malaya.)

10. ♂ up purple (Assam) to pale shining blue (Burma to Malaysia), with black borders broad on both wings (at least 2 mm. on F), and continued half-way along costa on F. ♀ upH almost entirely black in Assam, sexes similar Burma to Malaysia. UnH green tornal scaling absent or very sparse (present in *ammon* and *ariel*) *ammonides* (Doh.) (13 mm.).

(Races are **elira** nom. n. pro *ariel* Swinh. *nec* Doh. (*Lep. Ind.* **8** : 233), Assam, Khasi Hills, *ammonides* (Doh.), South Burma, **monava** subsp. n. (♂ up blue colour deeper and less shining than in Burmese form and un as in *chunsu*), Langkawi Islands, *chunsu* Fruh., North-east Sumatra, also Malaya, and *hammon* Fruh., West Java.)

11. UnH with post-discal and central spots in space 7 conjoined in upper half and not separated by a white dot. Un unicoloured crimson-brown.

12(13). ♂ up purple (Assam), or deep purple-blue (Malaya), with black border uniformly broad on both wings (2 mm. at vein 3 on F), and increasing slightly towards the costa. ♀ up with broad black borders, that on F increasing markedly towards the costa *ariel* (Doh.) (♂ 13, ♀ 12 mm.).

(Races are *ariel* (Doh.), Assam, and **antis** subsp. n. (♂ up bluer and more shining than in the Assam form, and un darker, more purple and with duller white markings. ♀ up as in *ammon* but duller, and un as in ♂), Malaya.)

13. ♂ up purple-blue with F black border narrow as in *ammon* ♂. ♀ up deep purple with broad black borders, that on F increasing somewhat at apex and tornus, but not considerably broadened as in Malayan *ariel* . . . . . *sarawaca* Moult. (♂ 15·5, ♀ 13 mm.).

(Known to me only from the types from Borneo.)

14. H with the usual tail at vein 2 and a very short tail at vein 3. UnF post-discal band usually only to vein 3, with a small spot against the outer border in space 2. Un dark purple-brown, with no whitened areas . . . . . *abseus* (Hew.) (16 mm.).

(Races are *mackwoodi* Rly., Ceylon, *indicus* Rly., Sikkim, **ophiala** nom. n. pro *abseus* Evans *nec* Hew., South Burma, *abseus* (Hew.), Malaya, also Sumatra, *nava* Fruh., Borneo, *oghatinna* Fruh., Bazilan, and *amphea* C. & R. Feld., Luzon.)

**Key for the separation of species of the *apidanus* Group.**

1 (6). UnH post-discal spots in spaces 7 and 6 form a dark bar coalesced with dark spot at end of cell, all inner edges in line.
2 (5). H with a well-developed tail at vein 2. Un markings prominent.
3 (4). UnH with a large basally bifid dark spot at mid costa, not reaching the basal dark area . . . . . *diardi* (Hew.) (20·5 mm.).

(Races are *diardi* (Hew.), Assam to Burma, *almansor* Fruh., Malaya, *capeta* (Hew.), Sumatra, *amha* Fruh., Borneo, *asatha* Fruh., Java, *zilana* Fruh., Bazilan, and *imperiosa* Fruh., South Celebes.)

4. UnH with dark spot at mid costa continued as a dark band across the cell to base of dorsum . . . . . *fulgida* (Hew.) (19 mm.).

(Races are *fulgida* (Hew.), Assam to Burma, *singhapura* (Dist.), Malaya, *tifata* Fruh. (= *batis* Fruh.), North-east Sumatra, *zohar* Fruh., Borneo, Kina Balu, and *tenea* Fruh., East Java : no constant difference in ♂ genitalia between the small form *tifata* and the normal form.)

5. Tailless. Un markings obscure . . *anniella* (Hew.) (♂ 19·5, ♀ 18·5 mm.).

(Races are *artegal* (Doh.), South Burma, *anniella* (Hew.), Malaya, *husaina* (sic) Fruh., North-east Sumatra, also Borneo, and *malangana* (Tox.), East Java.)

6. UnH post-discal spots in spaces 7 and 6 and at cell end can be distinguished as separated spots, which are more irregularly placed.
7(12). H tailed and lobed.
8 (9). UnH basal area broadly dark purple-brown and unmarked —— *apidanus* (Cram.) (20 mm.).

(Races are *ahamus* (Doh.), Upper Assam, *kartaphilus* Fruh., Malaya, *phalakron* Fruh. (= *anabas* (Tox.)), North-east Sumatra, *ambigua* (Tox.), Sumatra, Palembang, *anthracophila* (Tox.), Pulau Weh, *saturata* (Snell.), Billiton, *berossus* Fruh., North Borneo, *viribus* Fruh., West Borneo, *astrophila* (Tox.), Pulau Pandjang, near Simalur, *xisthrus* Fruh., Nias, *apidanus* (Cram.) (= *dorimond* (Stoll), *alter* (Tox.)), Java, *antipaxus* Fruh., East Java, *arahat* Fruh., Bawean, *palawanus* (Stgr.), Palawan, *iriya* Fruh., Bazilan, *cames* Fruh., Lombok, *himna* Fruh., Mindanao, and *arca* Nic., Celebes.)

9. UnH basal area variegated, extreme base pale at costa.
10(11). UnH without green tornal scales or black submarginal spots *adriana* (Nic.) (19·5 mm.).

(Described from Sikkim; occurs also in Assam and Siam.)

11. UnH with black submarginal spots in spaces 1b, 1c (faint) and 2 overlaid with metallic green scales . . . . *asoka* (Nic.) (19·5 mm.).

(Races are *asoka* (Nic.) (= *chola* (Mre.)), Sikkim, also Assam and North Burma, and *vaya* Fruh., Hong Kong. It is doubtful if *adriana* and *asoka* are specifically distinct.)

12. H tailless.
13(16). H crenulate. UnH basal area purple-brown, with outer edge irregular.
14(15). UnH without green tornal scales or black submarginal spots. UnH no pale sub-basal band . . . . . *areste* (Hew.) (20 mm.).

(Described from "India," probably Sikkim, and occurs also in Assam, Burma and Malaya; *patuna* (Mre.), Nepal, and *arestina* (Evans), Burma, Maymyo, are synonyms.)

15. UnH with black submarginal spots in spaces 1b, 1c and 2 overlaid with green metallic scales. UnH with a pale lilac sub-basal band *chinensis* C. & R. Feld. (20 mm.).

(Described from "China," probably Sikkim, and occurs also in Assam; *moelleri* (Nic.), Upper Assam, and *lazula* (Mre.), Darjiling, are synonyms. It is probable that *areste* and *chinensis* are conspecific.)

16. H smooth. UnH basal area deep black with outer edge regular and sharply defined . . . . . *morphina* (Dist.) (♂ 24, ♀ 22·5 mm.).

(Races are *morphina* (Dist.), Malaya, also West Sumatra and Borneo, and *sidicina* Fruh., North-east Sumatra, Battak Mountains.)

**Key for the separation of species of the *fulla* Group.**

1 (2). UnF post-discal band rather diffuse and more or less parallel with termen: no cell-end spot . . . . . *fulla* (Hew.) (18 mm.).

(Races are *ignara* Rly. & Godf., North Siam, also Sikkim to South Burma, *andamanica* (W. M. & Nic.) (= *subfasciata* (Mre.), 1881), Andaman Islands, **intaca** subsp. n. (♂♀ F termen more convex than in other races. ♂ up as in Waigeu form, un as in Buru. ♀ up dull purple, black bordering as in Andaman race, un as in ♂), Borneo, also Malaya, *prasiä* Fruh., Amboina, *fulla* (Hew.), Buru, and *babsi* Joicey & Talb., Waigeu. It is probable that *sosias* Fruh., Obi, and *canulia* (Hew.), the latter described from "Philippines" but almost certainly from elsewhere, are large races of *fulla*.)

2. UnF post-discal band clearly defined and upper portion oblique: dark spot at end of cell . . . . . *caeca* (Hew.) (17·5 mm.).

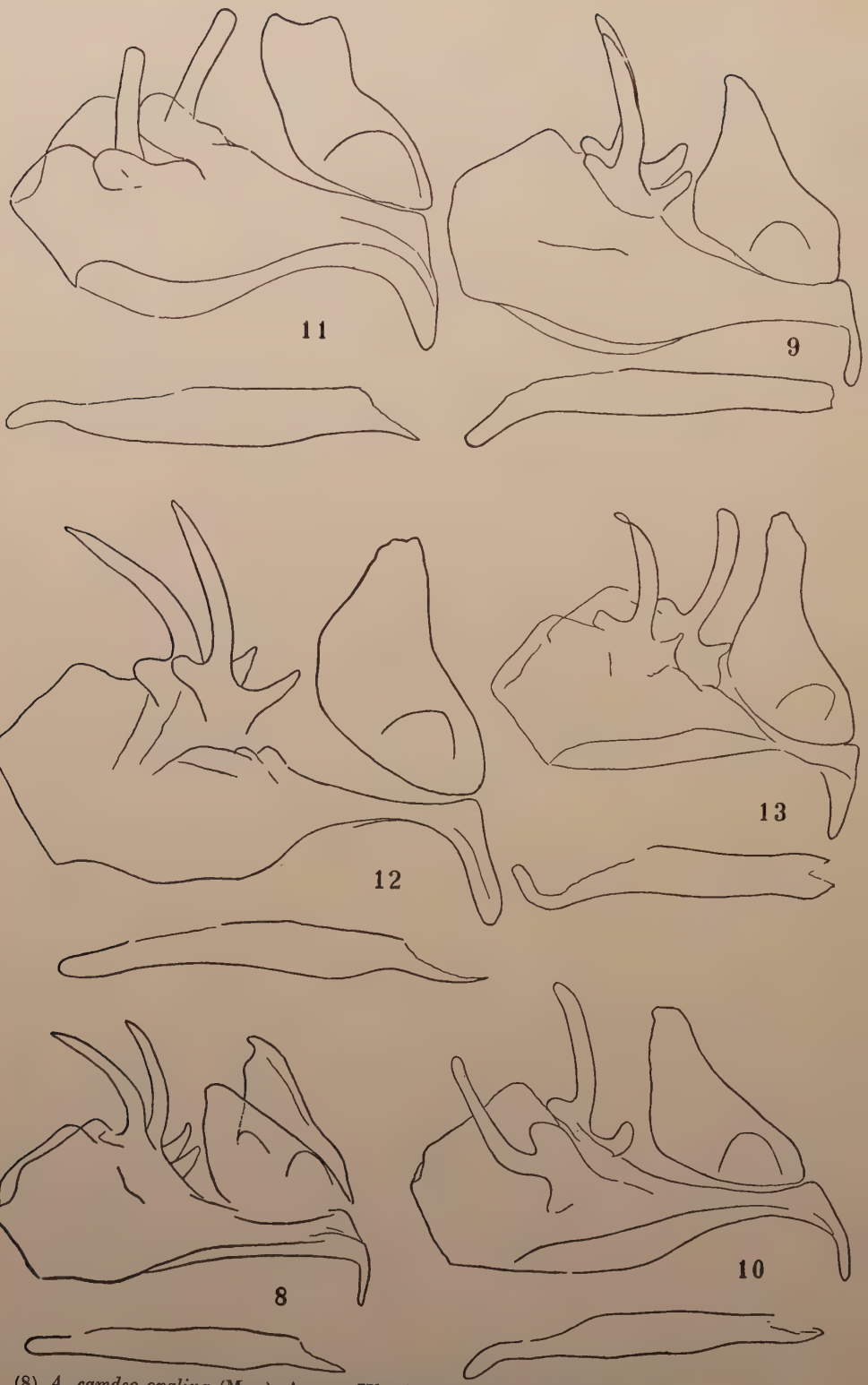
(Confined to Borneo.)

*A. weelii* Piepers, Java, and *A. scaeva* B.Bkr., Sumatra, are known to me only from the descriptions and I cannot classify them.

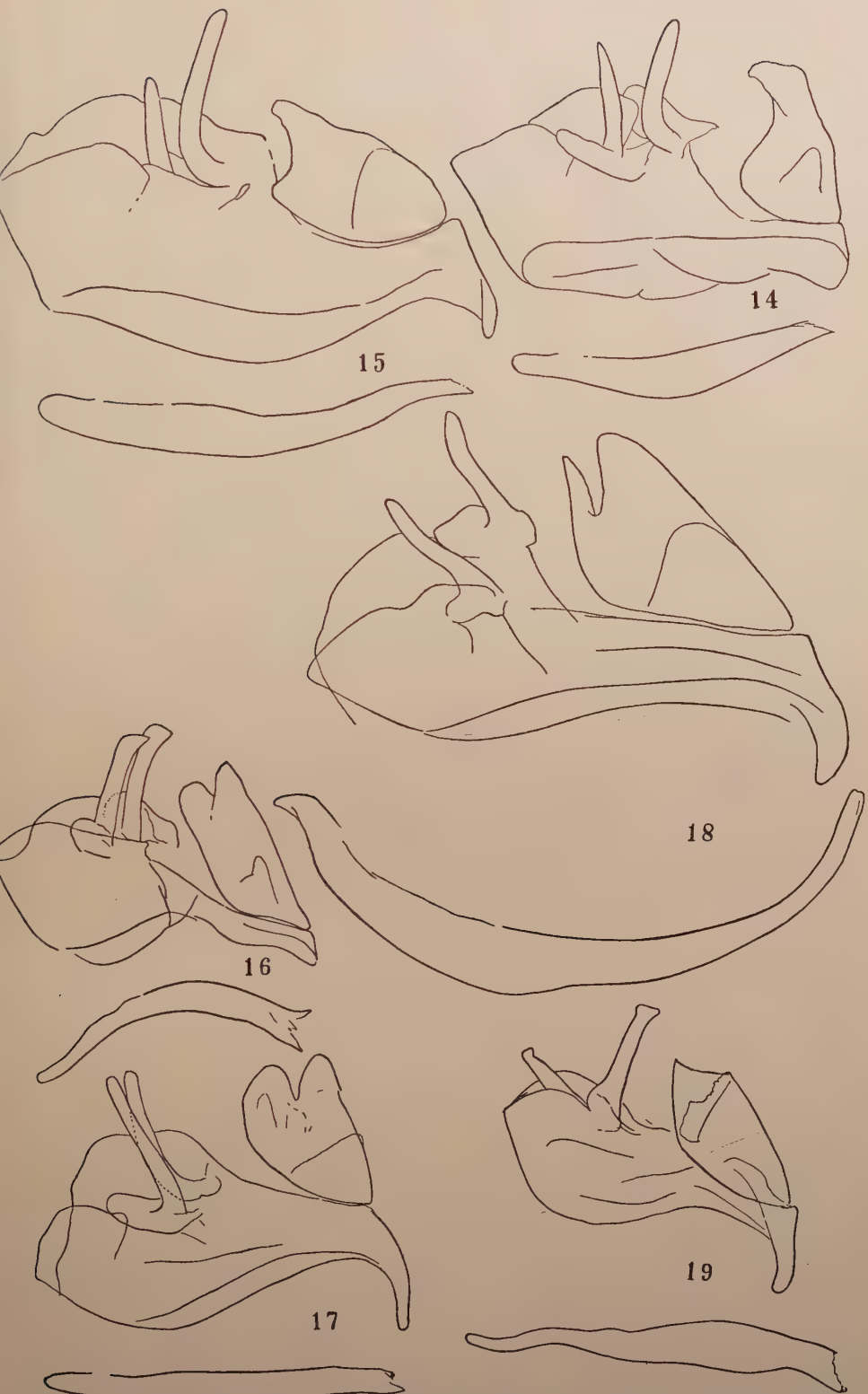
During the present investigation the holotypes have been examined of all the names attributed to Doherty, H. Druce, H. H. Druce, Evans, Fabricius, Fruhstorfer (except *aristomachus*, *biru*, *caesetius*, *corthatha*, *eurysthenes*, *sphendale* and *varro*), Grose-Smith, Hewitson (except *alea*, *amantes*, *anarte*, *areste*, *bazalus*, *hesba*, *muta* and *oenotria*), Joicey & Talbot, Moore (except *chola*, *epimuta*, *ganesa*, *perimuta* and *roona*), Moulton, Ollenbach, Riley, Riley & Godfrey, Seitz, Swinhoe, Tytler, Westwood and Wileman. Other types examined were *brahma*, *brookei*, *catori*, *deva*, *gunongensis*, *ijauensis* and *sandakani*, all of Bethune-Baker, *pryeri* Btlr., *amphimuta*, *annulata*, *antimuta*, *inornata* and *lycaenaria*, all of C. & R. Felder, and *fruhstorferi* Röb.

FIGS. 1–114.—Male genitalia of *Arhopala* forms. Unless stated otherwise only one clasper is shown.

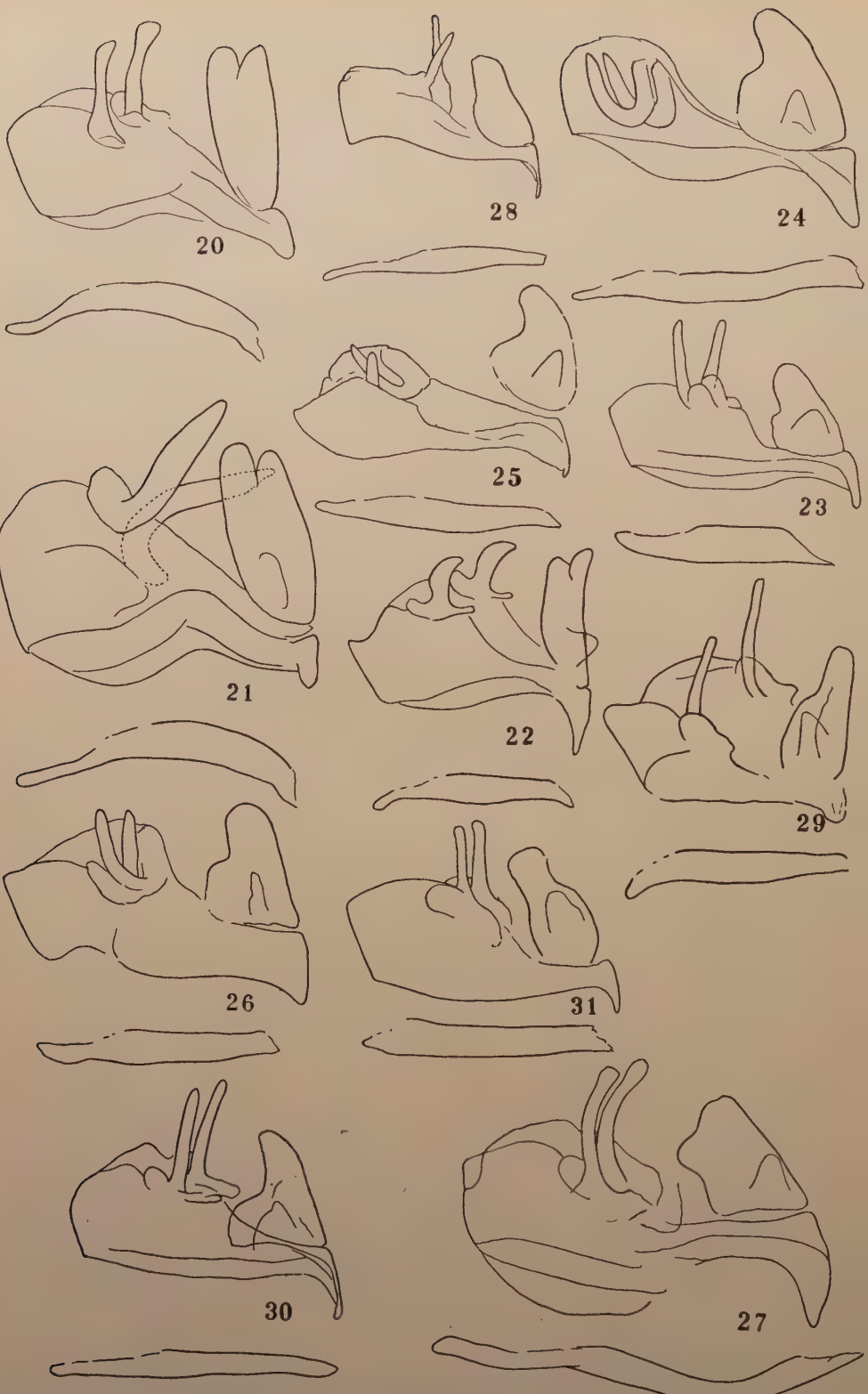
(1) *Arhopala ijauensis ijauensis* B.Bak., Langkawi Islands, (2) *A. achelous achelous* (Hew.), Malaya (dorso-ventral view of aedeagus), (3) *A. anthelus grahami* subsp. n., Malaya, (4) *A. auzea* Nic., no locality, (5) *A. anarte anarte* (Hew.), Burma, Ataran Valley, (6) *A. myrzala lammas* subsp. n., Borneo, (7) *A. hellada ozana* Fruh., Sumatra.



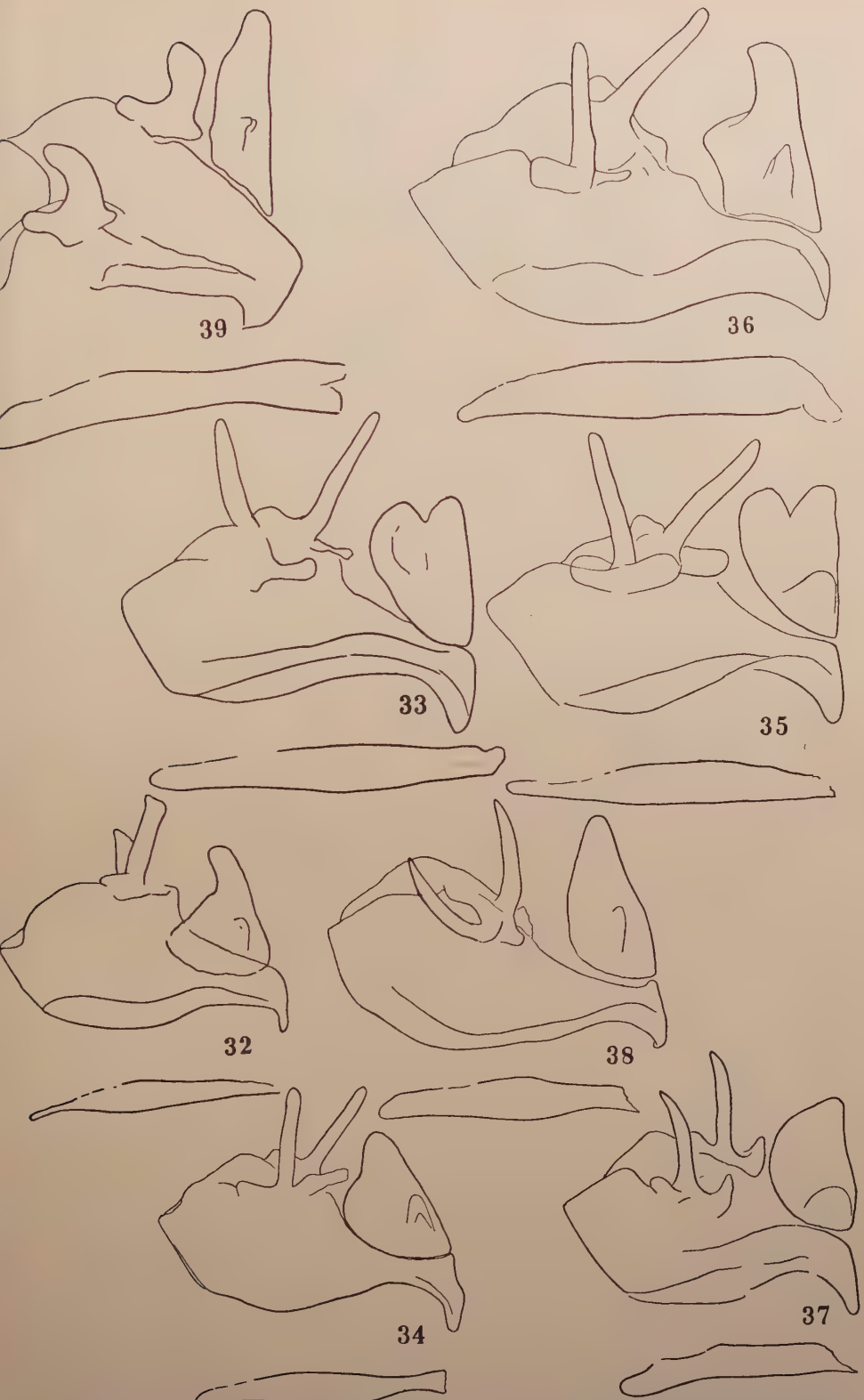

(8) *A. camdeo opalina* (Mre.), Assam, Khasi Hills, holotype (both claspers shown), (9) *A. camdeo camdana* subsp. n., Malaya, (10) *A. azata* Nic., North-east Sumatra, holotype, (11) *A. dispar dispar* Rly. & Godf., North Siam, holotype, (12) *A. dispar diluta* (Evans), Burma, Maymyo, (13) *A. karennia* (Evans), Burma, Karen Hills.



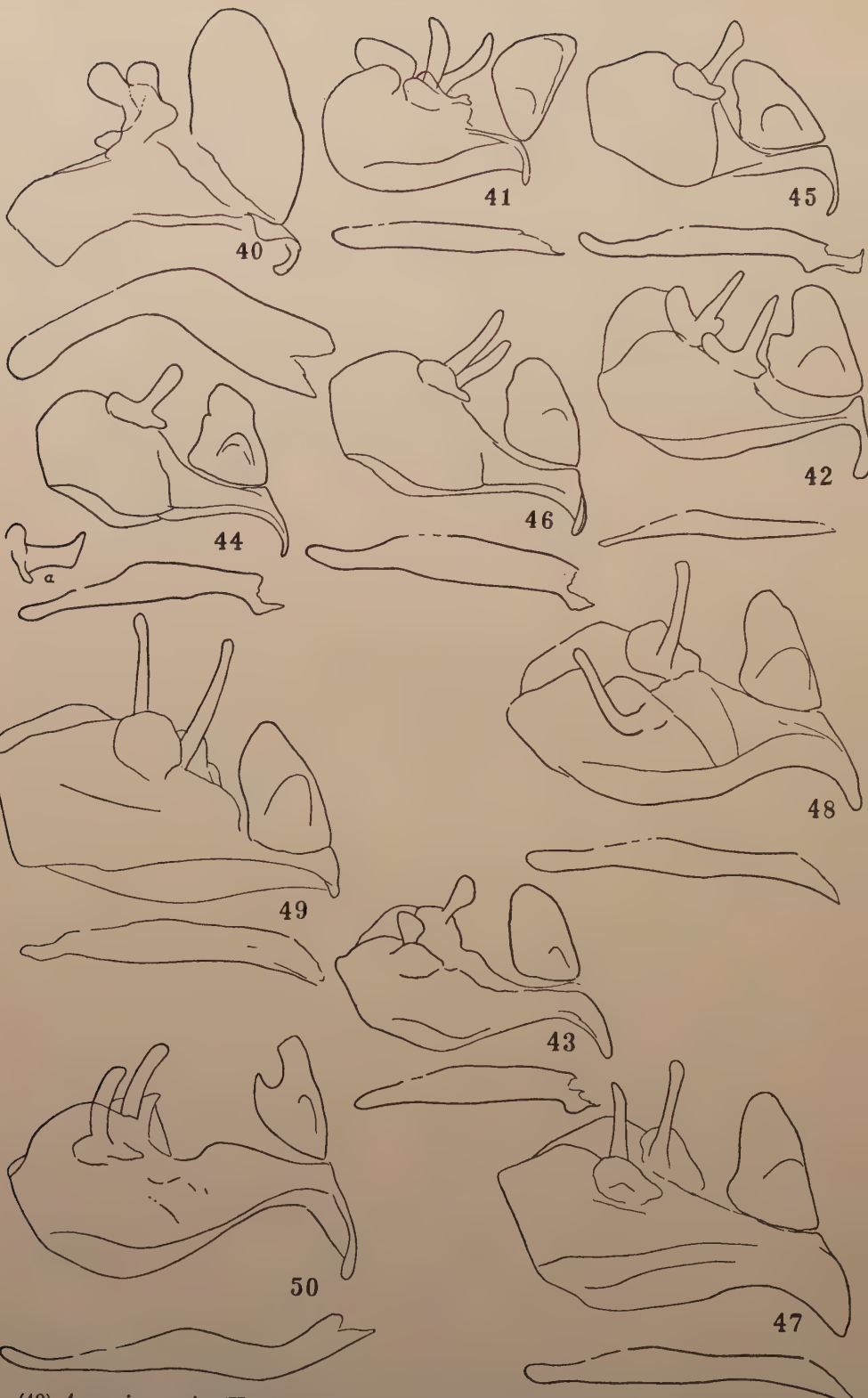

(14) *A. aedias agnis* Feld., Malaya, (15) *A. aedias aedias* (Hew.), East Java, (16) *A. atosia udapa* subsp. n., Malaya, (17) *A. pseudomuta pseudomuta* (Stgr.), Malaya, (18) *A. allata evandra* subsp. n., Borneo, (19) *A. hypomuta hypomuta* (Hew.), Malaya.




(20) *A. epimuta elsiei* (Evans), Burma, Mergui, (21) *A. epimuta epiala* subsp. n., Malaya (dorsal hooks aberrant), (22) *A. metamuta metamuta* (Hew.), Sumatra, holotype, (23) *A. avathina* sp. n., Malaya, holotype, (24) *A. muta waterstradti* B.Bak., Borneo, (25) *A. tropaea* sp. n., Malaya, holotype, (26) *A. wallacei daganda* subsp. n., Borneo, (27) *A. kurzi* (Dist.), Malaya, (28) *A. avatha* Nic., Malaya, (29) *A. zylda elioti* subsp. n., Malaya, holotype, (30) *A. moolaiana moolaiana* (Mre.) f. *pagaiensis* Ollenbach, Burma, Tavoy, (31) *A. agesilaus gesa* subsp. n., Langkawi Islands.

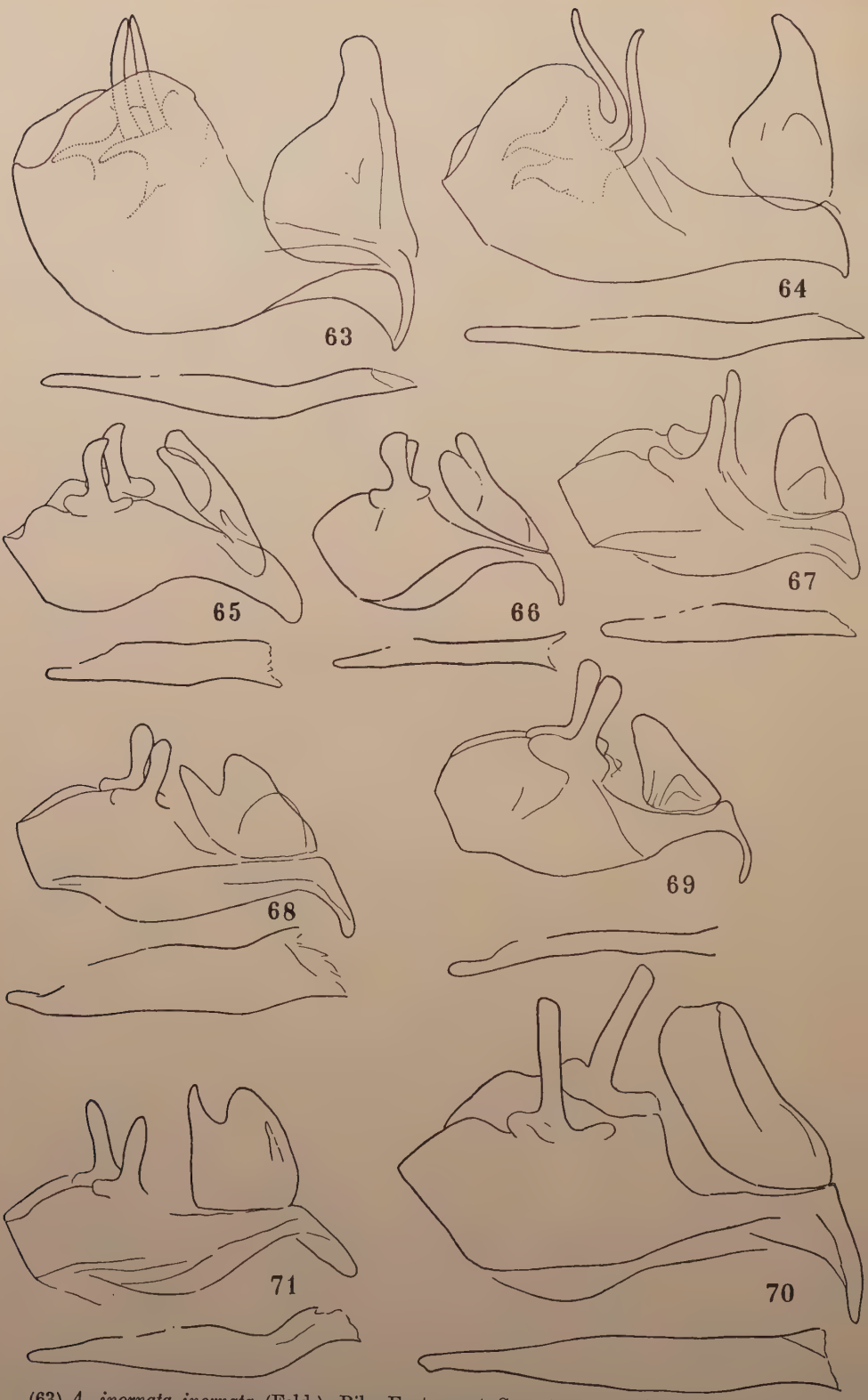



(32) *A. agesilaus major* (Stgr.), Sumatra, (33) *A. amphimuta amphimuta* (Feld.), Malaya, (34) *A. baluensis siabra* subsp. n., Borneo, Pulau Laut, (35) *A. asia* Nic., Malaya, (36) *A. dajagaka* B.Bak., Borneo, (37) *A. belphoebe belphoebe* Doh., Burma, Tenasserim Valley, holotype, (38) *A. anamuta* Semp., Mindoro, (39) *A. similis* H. H. Drc., Sumatra.

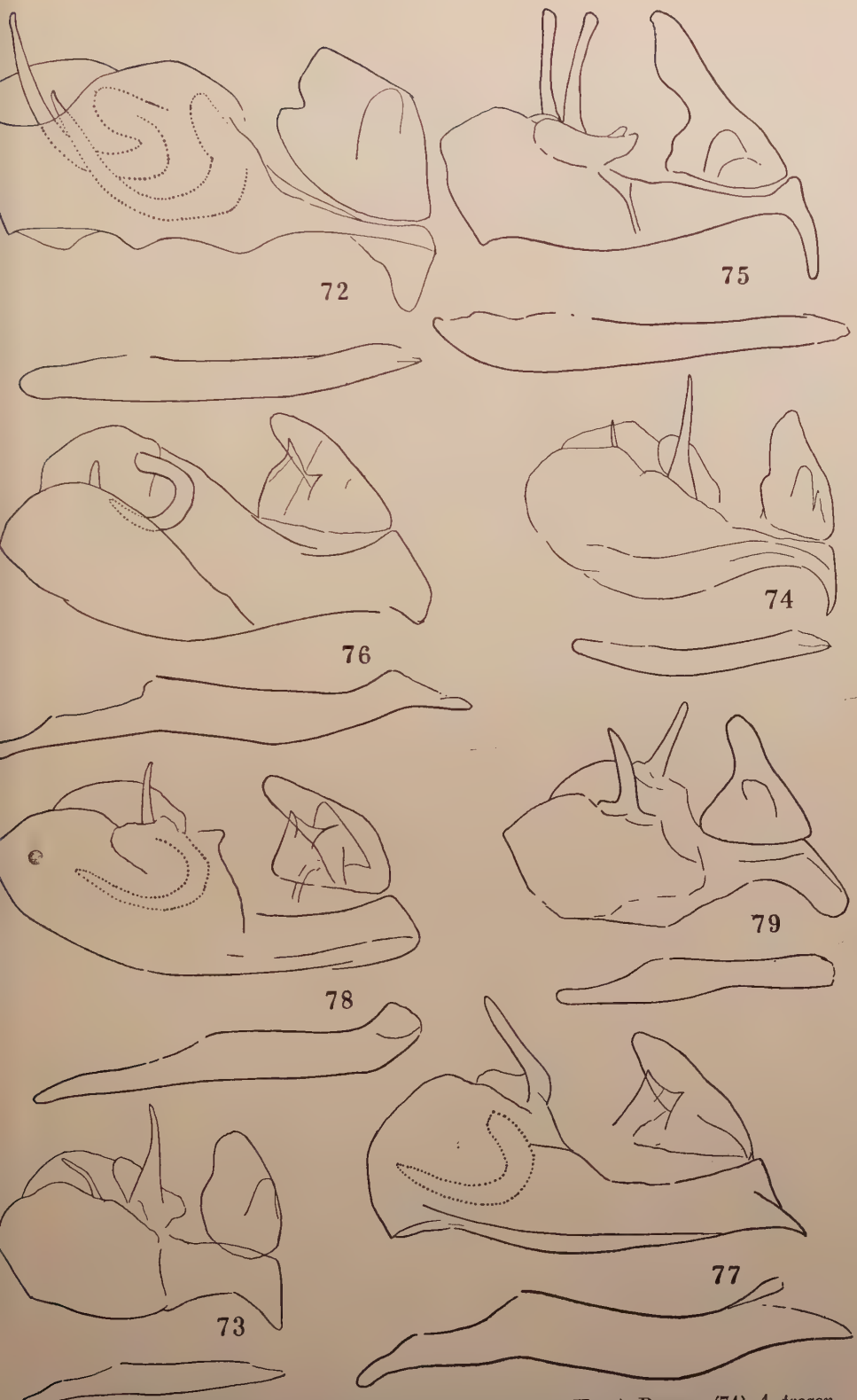



(40) *A. agesias agesias* (Hew.), Borneo, (41) *A. myrzalina* sp. n., Malaya, (42) *A. democritus democritus* (Fab.), Burma, Mergui, (43) *A. alitaeus mirabella* Doh., Burma, Mergui, (44) *A. atrax aida* Nic., Langkawi Islands, (*a*) *A. atrax myrtale* (Stgr.) Palawan (dorsal hook), (45) *A. ariana arianaga* subsp. n., Malaya, holotype, (46) *A. rafflesii elopura* H. H. Drc., Borneo, (47) *A. silhetensis silhetensis* (Hew.), Burma, Karen Hills, (48) *A. zambra zambra* Swinh., Malaya, (49) *A. apha aphadantas* subsp. n., Malaya, holotype, (50) *A. ace ace* Nic., Sumatra.

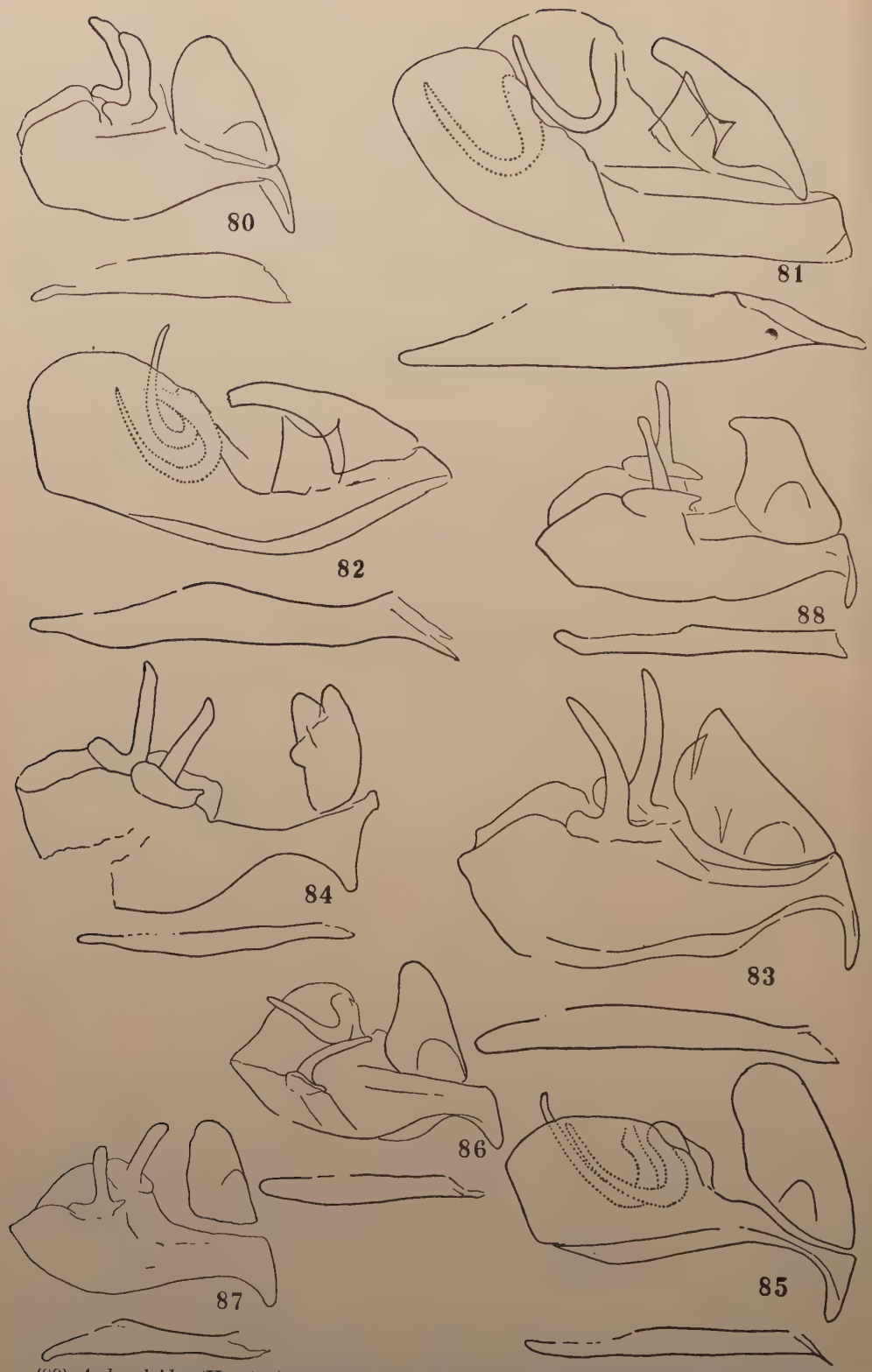
(51) *A. agrata agrata* Nic., Malaya, (52) *A. oenea* (Hew.), Sikkim, (53) *A. kounga ridleyi* subsp. n., Malaya, (54) *A. agamemnon* sp. n., Singapore, holotype, (55) *A. aroa aroa* (Hew.), Sumatra, (56) *A. phaenops phaenops* Feld., Mindoro, (57) *A. azinis evansi* subsp. n., Malaya, holotype, (58) *A. agaba* (Hew.), Burma, Tavoy, (59) *A. alea* (Hew.), Burma, Tavoy, (60) *A. canaraica* (Mre.), South India, Mysore, (61) *A. alemon* Nic., Burma, Pegu Yoma, (62) *A. alax* (Evans), Assam, Manipur, holotype (dorso-ventral view of aedeagus).



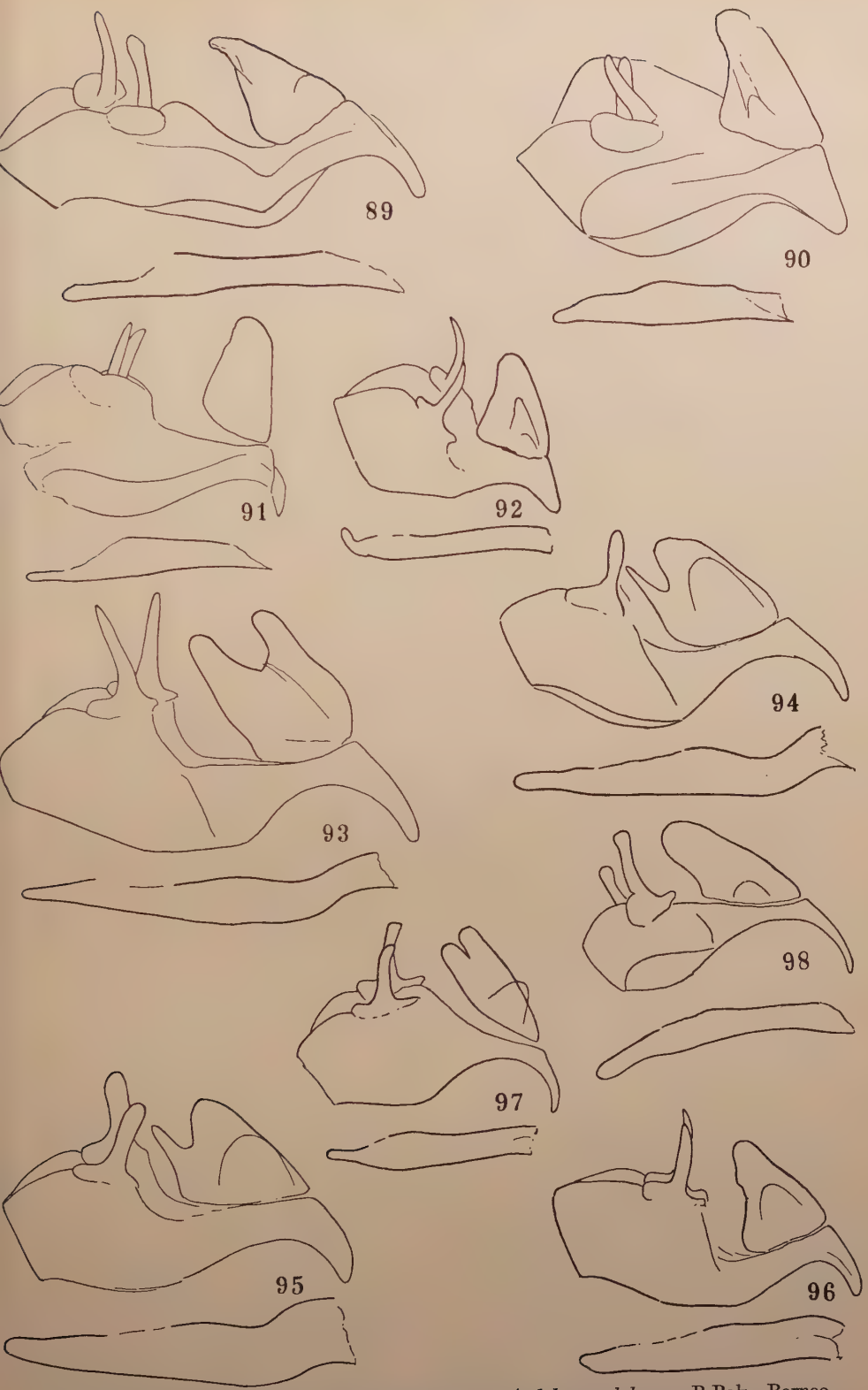

(63) *A. inornata inornata* (Feld.), Bila, East coast Sumatra, (64) *A. brahma* B.Bak., no locality, (65) *A. antimuta antimuta* Feld., Malaya, (66) *A. perimuta regina* nom. n., Burma, Mergui, (67) *A. alesia ocrida* (Hew.), Mindoro, (68) *A. paralea* (Evans), Burma, South Shan States, (69) *A. barami woodii* Ollenbach, Burma, Tavoy, (70) *A. centaurus nakula* (Feld.), Malaya, (71) *A. cooperi cooperi* (Evans), Burma, Mergui, holotype.



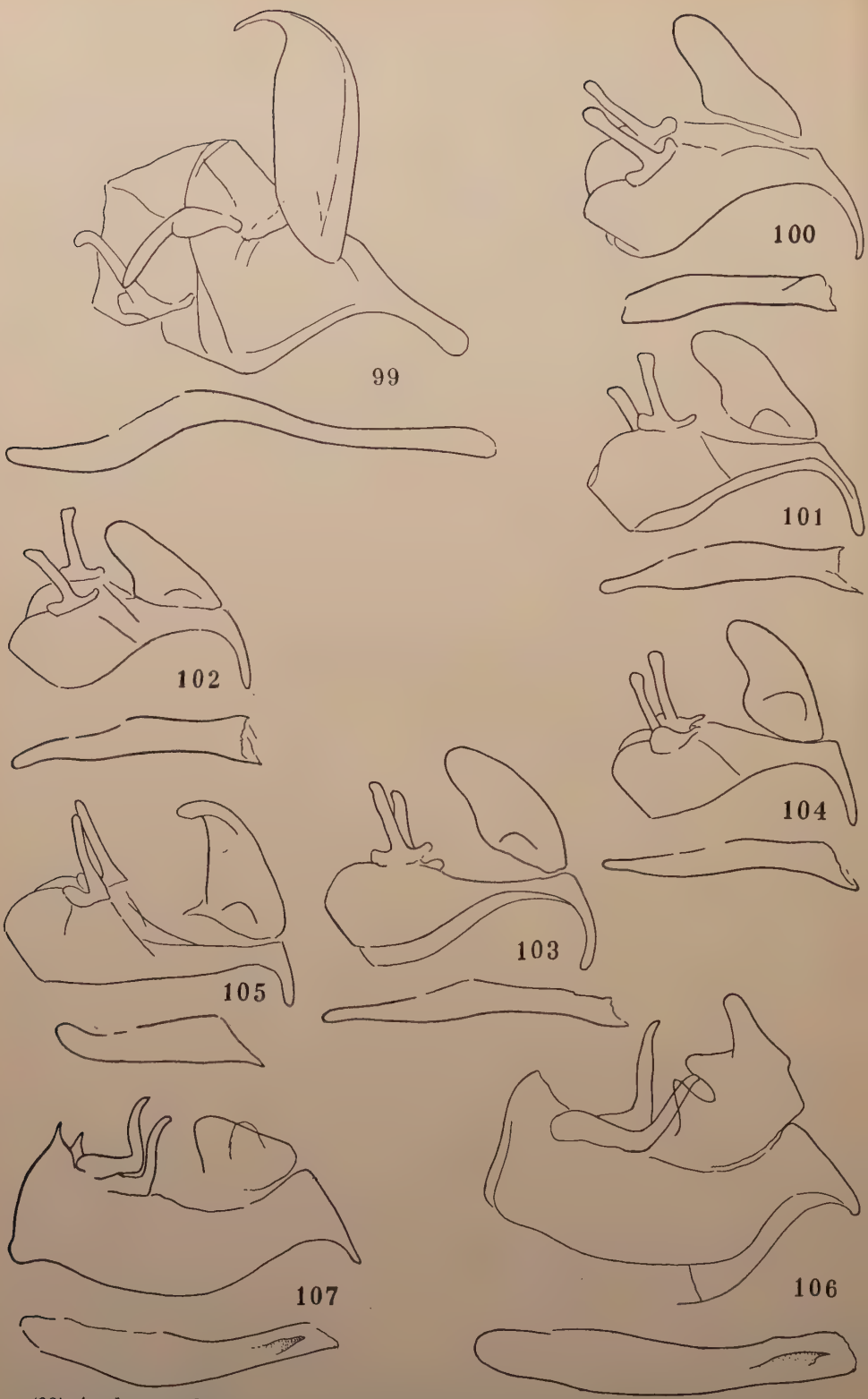

(72) *A. corinda acestes* Nic., Burma, Mergui, (73) *A. aurea* (Hew.), Borneo, (74) *A. trogon* (Dist.), Malaya, (75) *A. vihara vihara* (Feld.), Malaya, (76) *A. eumolphus maxwelli* (Dist.), Malaya, (77) *A. horsfieldi basiviridis* Nic., Sumatra, (78) *A. overdijkinki* sp. n., West Java, (79) *A. ormistoni* Rly., Ceylon.



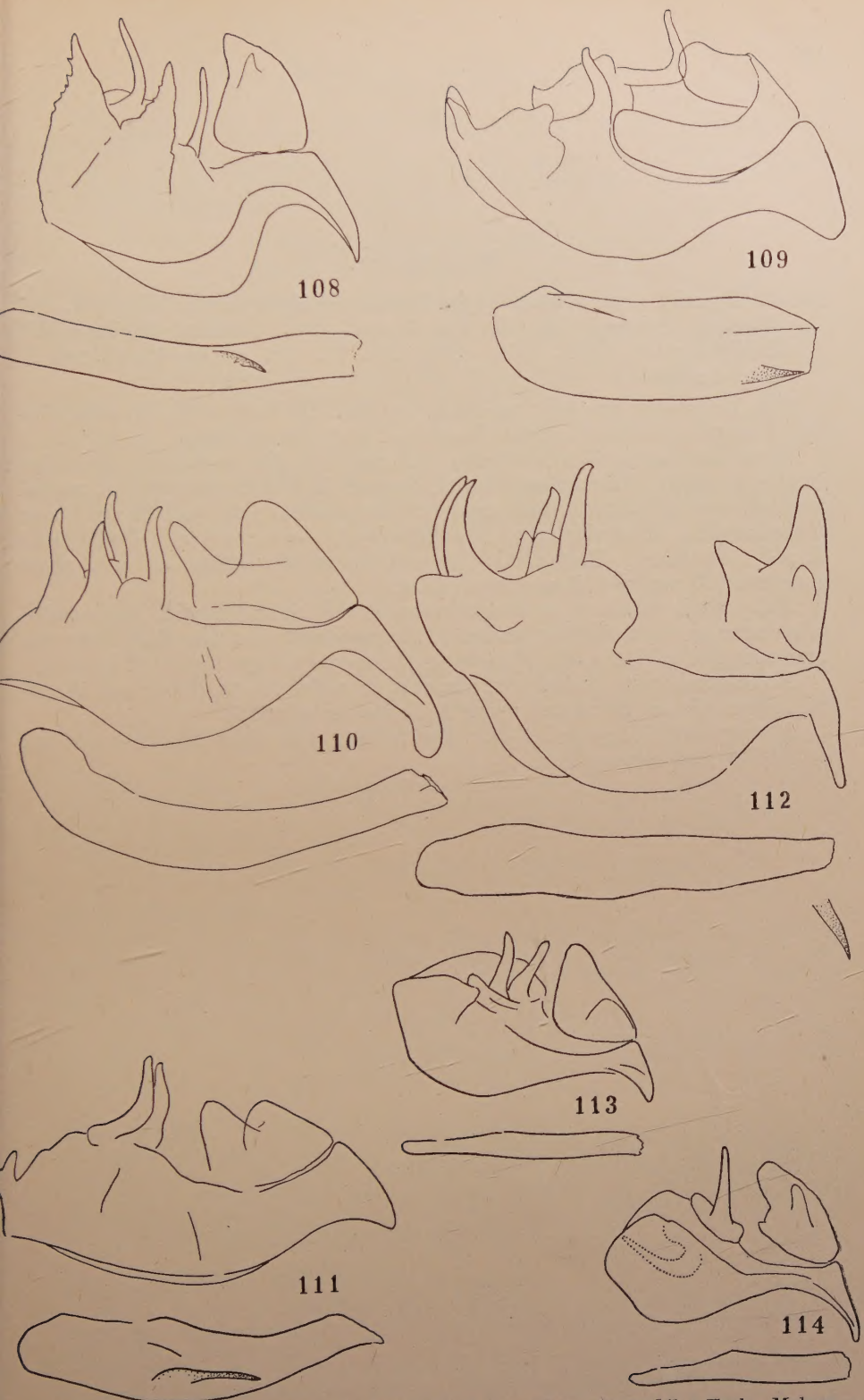

(80) *A. bazaloides* (Hew.), Assam, (81) *A. bazalus bazalus* (Hew.), Sikkim, (82) *A. singla* (Nic.), Sikkim, (83) *A. amantes amatrix* Nic., Burma, (84) *A. alaconia alaconia* (Hew.), Borneo, (85) *A. cardoni* sp. n., Malaya, (86) *A. wildeyana* sp. n., Malaya, (87) *A. zeta* (Mre.), Andaman Islands, (88) *A. asopia* (Hew.), Burma, Ataran Valley.




(89) *A. agelastus perissa* Doh., Burma, Mergui, (90) *A. labuana labuana* B.Bak., Borneo, (91) *A. aeeta* Nic., Burma, East Dawnas, (92) *A. epimete duessa* Doh., Burma, Ataran Valley, (93) *A. arvina aboë* Nic., Burma, Ataran Valley, (94) *A. rama rama* (Koll.), North-west Himalayas, Simla, (95) *A. dodonaea* (Mre.), North-west Himalayas, Simla, (96) *A. comica* Nic., Assam, Manipur, (97) *A. paramuta* (Nic.), Burma, Maymyo, (98) *A. ganesa loomisi* (H. Pryer), Japan.




(99) *A. aberrans aberrans* (Nic.), Burma, Maymyo, (100) *A. paraganesa birmana* (Mre.), Burma, Ataran Valley, (101) *A. ariel ariel* (Doh.), Assam, holotype, (102) *A. ammonides ammonides* (Doh.), Burma, Tenasserim Valley, holotype, (103) *A. ammon* (Hew.), Singapore, holotype, (104) *A. ariel antis* subsp. n., Malaya, holotype, (105) *A. abseus abseus* (Hew.), Malaya, (106) *A. diardi almansor* Fruh., Malaya, (107) *A. fulgida fulgida* (Hew.), Sikkim.




(108) *A. anniella anniella* (Hew.), Malaya, (109) *A. apidanus kartaphilus* Fruh., Malaya (both claspers shown), (110) *A. adriana* (Nic.), Sikkim, (111) *A. areste* (Hew.), Assam, (112) *A. morphina morphina* (Dist.), Malaya, (113) *A. fulla ignara* Rly. & Godf., Burma, Mergui, (114) *A. caeca* (Hew.), Borneo, holotype.

## Book Notice.

*French–English Science Dictionary for Students in Agricultural, Biological, and Physical Sciences.* By L. De Vries. 8vo. London (McGraw-Hill Publishing Co., Ltd.), 1940. Price 24*s.* 6*d.* pp. viii + 546, printed in double column.

This Dictionary has been produced by Prof. De Vries with the collaboration of members of the Graduate Faculty of Iowa State College.

It contains some 43,000 entries, is compact in size and in a serviceable flexible binding. Entomology is well covered in the dictionary and special care has been given to include many of the present, past, and future tenses of the irregular verbs which may be a difficulty to the average user of a French–English Dictionary. Past participles and the infinitive form are also given and some 500 common idioms are included.

Many words which are spelled the same in French and English are included in an attempt to assist the reader. It is apparent that the Dictionary has been compiled with the aim of assisting the reader always kept well in mind.

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A very useful 12-page list of abbreviations with their English meanings is added to the volume.

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Smith, A., 1936, New species of Coccidae, *Proc. R. ent. Soc. Lond.* (B) **6** : 301–306, pl. 1.

——. 1936, New species of Coccidae, *Trans. R. ent. Soc. Lond.* **84** : 901–936.

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*Series C* is issued prior to every General Meeting. It contains abstracts of exhibits to be shown and communications to be made, together with the titles of papers accepted for publication.

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As from January 1936 the journal *Stylops* is continued as *Proceedings Series B. Taxonomy*. Copies of volumes 1–4 are available at *£1 16s. 0d.* each, post free.

## MEETINGS

### TO BE HELD IN THE SOCIETY'S ROOMS

### 41, Queen's Gate, S.W.7

**1941.**

WEDNESDAY, October 1
" November 5
" December 3

**1942.**

" January 21 (ANNUAL MEETING)
" February 4

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